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*                                                                    *
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* the IDE default display format and the ED field has been added,    *
* effective March 20, 2005.  A new display format, IDERL, is now     *
* available and contains the CA role and document type information.  *
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=> FILE HCAPLUS
FILE 'HCAPLUS' ENTERED AT 16:40:26 ON 17 MAY 2006
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FILE COVERS 1907 - 17 May 2006 VOL 144 ISS 21
FILE LAST UPDATED: 16 May 2006 (20060516/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

Ring identifiers for the desired heterocyclic compounds

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=> D QUE
L23        49725 SEA FILE=REGISTRY ABB=ON  16.213/RID
L24       350798 SEA FILE=REGISTRY ABB=ON  16.515/RID
L25        31997 SEA FILE=REGISTRY ABB=ON  16.515.22/RID
L28       311942 SEA FILE=REGISTRY ABB=ON  16.195.24/RID
L30       292949 SEA FILE=REGISTRY ABB=ON  16.165.12/RID
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L35       199999 SEA FILE=REGISTRY ABB=ON  L33 NOT L34
L36         8572 SEA FILE=HCAPLUS ABB=ON  L23
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L44       161942 SEA FILE=REGISTRY ABB=ON  L42 NOT L43
L45        18638 SEA FILE=HCAPLUS ABB=ON  L43
L46       203029 SEA FILE=HCAPLUS ABB=ON  L44
L48          978 SEA FILE=HCAPLUS ABB=ON  ((L36 OR L37 OR L38 OR L39 OR L40 OR
                 L41) OR L45 OR L46)(L)ELECTROD?
L49          115 SEA FILE=HCAPLUS ABB=ON  L48 AND ELECTROCHEMICAL/SC
L50          158 SEA FILE=HCAPLUS ABB=ON  L48(L)DEV/RL
L51           83 SEA FILE=HCAPLUS ABB=ON  L49 AND L50
L53           53 SEA FILE=HCAPLUS ABB=ON  L51 AND (1840-2003)/PY,AY,PRY

=> D L53 BIB ABS IND HITSTR 1-53

L53  ANSWER 1 OF 53  HCAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:522908  HCAPLUS
DN   143:62659
TI   Electrode substrate pigment sensitized photoelectrochemical cell, its
     manufacture, and the photoelectrochemical cell
IN   Nakagawa, Hiroki
PA   Dainippon Printing Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 26 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     --------------      ----   --------    --------------------   --------
PI   JP 2005158726        A2    20050616    JP 2004-322559         20041105 <--
PRAI JP 2003-379016       A     20031107  <--
AB   The electrode substrate has a transparent electrode on 1 side of a
     transparent resin film, a porous semiconductor electrode using a plurality
     of fine semiconductor particles on the transparent electrode, and a
     pigment sensitizer loaded on the surfaces of the semiconductor particles;
     where the transparent electrode has a 1st conductive metal layer which
     combines many fine wires, a corrosion-protection layer coated on the outer
     surface of the 1st conductive layer by electroplating, electroless
     plating, or chemical forming, and a 2nd conductive metal layer on the
     corrosion-protection layer; where the corrosion-protection layer has an
     anti-corrosion property for an electrolyte.  The method for manufacturing the
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above electrode substrate is also disclosed. The photoelectrochem. cell comprises a 1st electrode substrate having a pigment loaded on a porous semiconductor electrode, a 2nd electrode substrate facing the 1st electrode substrate, and an electrolyte layer between the 2 electrode substrate; where the 1st electrode substrate uses the above electrode substrate.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment sensitized photoelectrochem cell electrode substrate structure manuf; photoelectrochem cell electrode corrosion protection layer

IT Phenolic resins, uses
Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(structure and manufacture of ***electrode*** substrates containing corrosion-protection layers for pigment sensitized photoelectrochem. cells)

IT Photoelectrochemical cells
Photoelectrodes
(structure and manufacture of electrode substrates containing corrosion-protection layers for pigment sensitized photoelectrochem. cells)

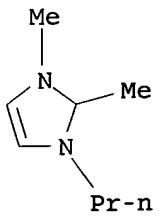
IT Polyurethanes, uses
RL: DEV (Device component use); USES (Uses)
(structure and manufacture of electrode substrates containing corrosion-protection layers for pigment sensitized photoelectrochem. cells)

IT 7429-90-5, Aluminum, uses 7440-06-4, Platinum, uses 10381-36-9, Nickel phosphate
RL: DEV (Device component use); USES (Uses)
(structure and manufacture of ***electrode*** substrates containing corrosion-protection layers for pigment sensitized photoelectrochem. cells)

IT 7440-50-8, Copper, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 11110-83-1 13463-67-7, Titania, uses 25038-59-9, uses 37346-11-5 50926-11-9, ITO 118676-08-7, tert-Butyl pyridine **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of **electrode** substrates containing corrosion-protection layers for pigment sensitized photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of **electrode** substrates containing corrosion-protection layers for pigment sensitized photoelectrochem. cells)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

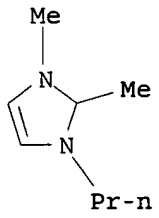
L53 ANSWER 2 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:522781 HCAPLUS
DN 143:46061
TI Photoelectric converter, electronic device, and their manufacture
IN Morooka, Masahiro; Suzuki, Yusuke
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005158380	A2	20050616	JP 2003-393440	20031125 <--
PRAI	JP 2003-393440		20031125 <--		

AB The converter or the electronic device has an electrolyte layer between a pigment sensitized semiconductor electrode and a counter electrode; where the counter electrode has a porous catalyst layer, comprising conductive particles having particle size 0.001-1 μm or a conductive polymer, on a side facing the electrolyte layer. The converter or the electronic device is manufactured by forming the required porous catalyst layer on 1 side of the counter electrode facing the electrolyte layer.

IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelec converter porous catalyst layer
IT Photoelectric devices
(converters; structure and manufacture of photoelec. converters containing porous catalyst layers on counter electrodes)
IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(structure and manufacture of photoelec. converters containing porous catalyst layers on counter electrodes)
IT 3978-81-2, 4-tert-Butyl pyridine 7440-02-0, Nickel, uses 7440-18-8, Ruthenium, uses 7440-47-3, Chromium, uses 7553-56-2, Iodine, uses 8006-28-8, Sodalime 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 18282-10-5, Tin oxide (SnO2) 50926-11-9, ITO 60676-86-0, Fused silica 126213-51-2, Polyethylene dioxythiophene **218151-78-1**, 1,2-Dimethyl-3-Propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of photoelec. converters containing porous catalyst

layers on counter **electrodes**)
IT 141460-19-7, Ru535
RL: MOA (Modifier or additive use); USES (Uses)
(structure and manufacture of photoelec. converters containing porous catalyst
layers on counter electrodes)
IT **218151-78-1**, 1,2-Dimethyl-3-Propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of photoelec. converters containing porous catalyst
layers on counter **electrodes**)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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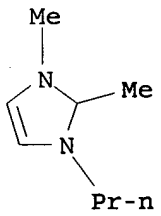
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 3 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:522780 HCAPLUS
DN 143:46060
TI Photoelectric converter, its manufacture, and electronic device
IN Morooka, Masahiro; Suzuki, Yusuke
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005158379	A2	20050616	JP 2003-393433	20031125 <--
PRAI JP 2003-393433		20031125 <--		

AB The converter or the electronic device has an electrolyte layer between a pigment sensitized semiconductor electrode and a counter electrode; where the counter electrode has a light scattering reflection layer on a side facing the electrolyte layer. The converter is manufactured by forming the light scattering reflection layer on 1 side of the counter electrode facing the electrolyte layer.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelec converter light scattering reflection layer
IT Photoelectric devices
(converters; structure and manufacture of photoelec. converters containing light

scattering reflection layers on counter electrodes)
IT Epoxy resins, uses
Glass, uses
RL: DEV (Device component use); USES (Uses)
(structure and manufacture of photoelec. converters containing light scattering
reflection layers on counter electrodes)
IT 3978-81-2, 4-tert-Butyl pyridine 7440-06-4, Platinum, uses 7440-18-8, Ruthenium, uses 7440-47-3, Chromium, uses 7553-56-2, Iodine, uses 8006-28-8, Sodalime 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 18282-10-5, Tin oxide (SnO2) 24937-78-8, EVA 50926-11-9, ITO **218151-78-1**, 1,2-Dimethyl-3-Propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of photoelec. converters containing light scattering
reflection layers on counter **electrodes**)
IT 141460-19-7, Ru535
RL: MOA (Modifier or additive use); USES (Uses)
(structure and manufacture of photoelec. converters containing light scattering
reflection layers on counter electrodes)
IT **218151-78-1**, 1,2-Dimethyl-3-Propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of photoelec. converters containing light scattering
reflection layers on counter **electrodes**)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 4 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:474750 HCAPLUS
DN 143:10608
TI Formation method of porous semiconductor electrode, manufacture of electrode substrate for pigment sensitized photoelectrochemical cell, the electrode substrate, and photoelectrochemical cell
IN Nakagawa, Hiroki
PA Dainippon Printing Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI	JP 2005142446	A2	20050602	JP 2003-379017	20031107 <--
PRAI	JP 2003-379017		20031107 <--		

AB The method comprises: forming a coating film by a coating solution which contains semiconductor particles; drying the film by irradiation the film with IR light which contains a light wavelength absorbed into the liquid phase component of the film. The electrode substrate is manufactured by forming a transparent substrate on 1 side of a transparent electrode; forming the above semiconductor electrode; and loading a pigment on the semiconductor particles of the semiconductor electrode. The photoelectrochem. cell has an electrolyte layer between the above electrode substrate, containing a pigment loaded semiconductor electrode, and a 2nd electrode substrate.

IC ICM H01L031-04
ICS H01L021-28; H01M014-00

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment sensitized photoelectrochem cell semiconductor electrode manuf

IT Photoelectrodes
(manufacture of pigment sensitized semiconductor electrodes for photoelectrochem. cells)

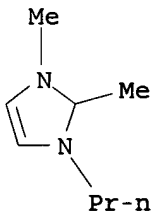
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(manufacture of pigment sensitized semiconductor electrodes for photoelectrochem. cells)

IT 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 25038-59-9, PET, uses 50926-11-9, ITO **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of pigment sensitized semiconductor **electrodes** for photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of pigment sensitized semiconductor **electrodes** for photoelectrochem. cells)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 5 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:471530 HCAPLUS

DN 143:10562

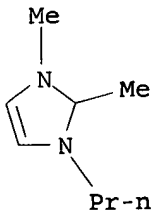
TI Formation method of porous semiconductor electrode, manufacture of electrode substrate for pigment sensitized photoelectrochemical cell, the electrode substrate, and photoelectrochemical cell

IN Nakagawa, Hiroki
PA Dainippon Printing Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005142089	A2	20050602	JP 2003-379021	20031107 <--
PRAI	JP 2003-379021		20031107 <--		

AB The semiconductor electrode is formed by applying a coating solution containing semiconductor particles on a coated object by using an elec. field jet coating, which discharges the coating solution by applying a voltage on an electrode arranged at the discharge opening of the coating solution or its vicinity, to obtain a coating film; and fixing the semiconductor particles on the coated object. The electrode substrate is manufactured by forming a transparent substrate on 1 side of a transparent electrode; forming the above semiconductor electrode; and loading a pigment on the semiconductor particles of the semiconductor electrode. The photoelectrochem. cell has an electrolyte layer between the above electrode substrate, containing a pigment loaded semiconductor electrode, and a 2nd electrode substrate.

IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST pigment sensitized photoelectrochem cell semiconductor electrode manuf
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(Surlyn; manufacture of pigment sensitized semiconductor electrodes for photoelectrochem. cells)
IT Photoelectrodes
(manufacture of pigment sensitized semiconductor electrodes for photoelectrochem. cells)
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(manufacture of pigment sensitized semiconductor electrodes for photoelectrochem. cells)
IT 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 25038-59-9, PET, uses 50926-11-9, ITO **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of pigment sensitized semiconductor **electrodes** for photoelectrochem. cells)
IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of pigment sensitized semiconductor **electrodes** for photoelectrochem. cells)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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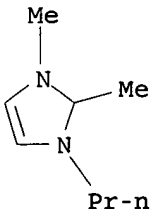
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 6 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:471529 HCAPLUS
DN 143:10561
TI Electrode substrate for pigment sensitized photoelectrochemical cell and the photoelectrochemical cell
IN Nakagawa, Hiroki
PA Dainippon Printing Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005142088	A2	20050602	JP 2003-379020	20031107 <--
PRAI	JP 2003-379020		20031107 <--		

AB The electrode substrate has a transparent electrode formed on 1 side of a transparent substrate; where the electrode has a 1st transparent conductive metal oxide layer formed on the transparent substrate, a 2nd conductive layer formed on the 1st conductive layer, and a 3rd conductive C layer formed on the 2nd conductive layer. The photoelectrochem. cell has a photoelectrode substrate, containing a porous semiconductor electrode which consists pigment loaded fine semiconductor particles, a counter electrode substrate, and an electrolyte layer between the photoelectrode substrate and the counter electrode substrate; where the photoelectrode substrate or the counter electrode substrate uses the above electrode substrate.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST pigment sensitized photoelectrochem cell photoelectrode counter electrode structure
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(Surlyn; structure of photoelectrodes or counter electrodes for pigment sensitized photoelectrochem. cells)
IT Photoelectrodes
(structure of photoelectrodes or counter electrodes for pigment sensitized photoelectrochem. cells)
IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(structure of photoelectrodes or counter electrodes for pigment

sensitized photoelectrochem. cells)
IT 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 50926-11-9, ITO 99685-96-8, C60 Fullerene 118676-08-7, tert-Butyl pyridine **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure of photoelectrodes or counter **electrodes** for pigment sensitized photoelectrochem. cells)
IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure of photoelectrodes or counter **electrodes** for pigment sensitized photoelectrochem. cells)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 7 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:471527 HCAPLUS
DN 143:29424
TI Electrode substrate for pigment sensitized photoelectrochemical cell, its manufacture, and the photoelectrochemical cell
IN Nakagawa, Hiroki
PA Dainippon Printing Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 29 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005142085	A2	20050602	JP 2003-379014	20031107 <--
PRAI JP 2003-379014		20031107 <--		

AB The electrode substrate has a transparent electrode on 1 side of a transparent substrate, a porous semiconductor electrode using a plurality of fine semiconductor particles on the transparent electrode, and a pigment sensitizer loaded on the surfaces of the semiconductor particles; where the electrode substrate has a wettability variable layer between the transparent electrode and the semiconductor electrode; and a territory which becomes the base of the semiconductor electrode within the surface of wettability variable layer has a relatively high wettability. The method foe manufacturing the above electrode substrate is also disclosed. The photoelectrochem. cell comprises a 1st electrode substrate having a pigment loaded on a porous semiconductor electrode, a 2nd electrode substrate facing the 1st electrode substrate, and an electrolyte layer

between the 2 electrode substrate; where the 1st electrode substrate uses the above electrode substrate.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment sensitized photoelectrochem cell electrode substrate structure manuf it

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(Surlyn; structure and manufacture of electrode substrates containing wettability variable layers for pigment sensitized photoelectrochem. cells)

IT Photoelectrochemical cells
Photoelectrodes
(structure and manufacture of electrode substrates containing wettability variable layers for pigment sensitized photoelectrochem. cells)

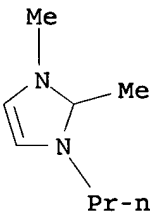
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(structure and manufacture of electrode substrates containing wettability variable layers for pigment sensitized photoelectrochem. cells)

IT 1185-55-3, TSL 8113 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 25038-59-9, uses 50926-11-9, ITO 61660-12-6, MF-160E **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of **electrode** substrates containing wettability variable layers for pigment sensitized photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(structure and manufacture of **electrode** substrates containing wettability variable layers for pigment sensitized photoelectrochem. cells)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 8 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:344673 HCAPLUS

DN 142:414441

TI Electrode catalyst layer for fuel cell

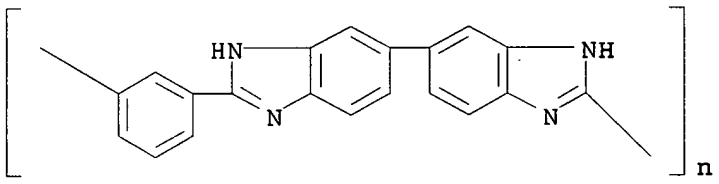
IN Miyake, Naoto; Wakizoe, Masanobu

PA Asahi Kasei Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005108588	A2	20050421	JP 2003-339468	20030930 <--
PRAI JP 2003-339468		20030930 <--		

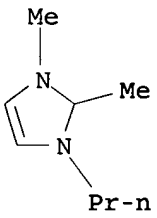
AB The catalyst layer comprises an ion-exchange group containing perfluorocarbon polymer, a polybenzimidazol, and an electrode catalyst.
IC ICM H01M004-86
ICS H01M008-10
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST fuel cell electrode catalyst perfluorocarbon polymer polybenzimidazol
IT Fuel cell electrodes
(electrode catalyst layers having ion-exchange group containing perfluorocarbon polymers and polybenzimidazols for fuel cells)
IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(electrode catalyst layers having ion-exchange group containing perfluorocarbon polymers and polybenzimidazols for fuel cells)
IT 127-19-5, Dimethyl acetamide **25734-65-0** 69462-70-0
RL: **DEV (Device component use)**; USES (Uses)
(**electrode** catalyst layers having ion-exchange group containing perfluorocarbon polymers and polybenzimidazols for fuel cells)
IT **25734-65-0**
RL: **DEV (Device component use)**; USES (Uses)
(**electrode** catalyst layers having ion-exchange group containing perfluorocarbon polymers and polybenzimidazols for fuel cells)
RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX NAME)



L53 ANSWER 9 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:302699 HCAPLUS
DN 142:376525
TI Photoelectric converter and method for improving its photoelectric conversion efficiency
IN Uchida, Satoshi
PA Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005093406	A2	20050407	JP 2003-363861	20030917 <--

PRAI JP 2003-363861 20030917 <--
AB The converter comprises a working electrode, an electrolyte solution, and a counter electrode and converts a light injected between the working electrode and the counter electrode to electricity. The method is carried out by increasing its photoelec. conversion area.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelec converter photoelec conversion improvement conversion area increasing
IT Photoelectric devices
(converters; photoelec. converter using light injected between working electrodes and counter electrodes for improved efficiency)
IT Photoelectrochemical cells
(photoelec. converter using light injected between working electrodes and counter electrodes for improved efficiency)
IT 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 18282-10-5D, Tin oxide (SnO2), F doped 118676-08-7, tert-Butyl pyridine **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(photoelec. converter using light injected between working **electrodes** and counter **electrodes** for improved efficiency)
IT 141460-19-7, Ru535
RL: MOA (Modifier or additive use); USES (Uses)
(photoelec. converter using light injected between working electrodes and counter electrodes for improved efficiency)
IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(photoelec. converter using light injected between working **electrodes** and counter **electrodes** for improved efficiency)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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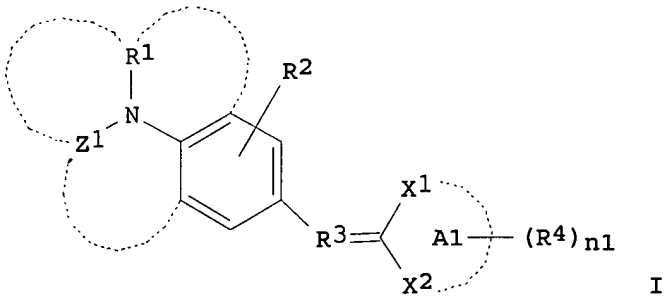
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 10 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:212646 HCAPLUS
DN 142:282852
TI Photoelectric conversion material, semiconductor electrode and photoelectric converter which uses the electrode .
IN Horiuchi, Tamotsu; Miura, Hidetoshi
PA Mitsubishi Paper Mills, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 52 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005063833	A2	20050310	JP 2003-292979	20030813 <--
PRAI JP 2003-292979		20030813 <--		

GI



I

AB The material uses a compound I [R1 = (substituted) alkyl, (substituted) aralkyl, (substituted) alkenyl, (substituted) alkoxy, (substituted) allyl, or (substituted) heterocyclic ring; R2 = H, halo, (substituted) alkyl, (substituted) alkoxy, (substituted) allyl, or (substituted) heterocyclic ring; R3 = linking group bonding benzene ring and A ring; R4 = alkyl, aralkyl, alkenyl, alkoxy, alkylthio, substituted amino, (substituted) allyl, heterocyclic ring, or acidic group-containing substituent; X1, X2 = O, S, N, (substituted) dicyano methylene, (substituted) bis(alkoxy carbonyl) methylene, (substituted) bis(allyloxy carbonyl) methylene, (substituted) biscarboxyl methylene, substituted amino, carbonyl, sulfonyl, (substituted) acyl methylene, (substituted) methine, (substituted) alkylene, (substituted) cycloalkylene, (substituted) hydroxy methylene, or thiocarbonyl group; A1 = heterocyclic ring and may condense with aliphatic condensed ring, aromatic condensed ring, or heterocyclic ring; Z1 = aliphatic condensed ring, aromatic condensed ring, or heterocyclic ring bonded by N and benzene ring; R1 may bond with Z1 or benzene ring to form a ring structure; and n1 = integer 1-4]. The electrode has a semiconductor layer coated on a surface-conductive substrate and a pigment adsorbed on the semiconductor layer; where the pigment contains ≥1 above compound I. The converter, especially for a photoelectrochem. cell, uses the above electrode.

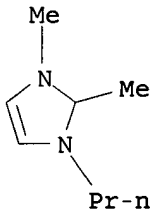
IC ICM H01M014-00
ICS C09B023-00; H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST pigment compd semiconductor electrode photoelec converter
IT Photoelectric devices
(converters; semiconductor*** electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)
IT Photoelectrochemical cells
(semiconductor*** electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)
IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses

218151-78-1, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor*** **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT 81-25-4 546-18-9 847359-73-3 847359-74-4 847359-75-5 847359-76-6
847359-77-7 847359-78-8 847359-79-9 847359-80-2 847359-81-3
847359-82-4 847359-83-5 847359-84-6 847359-85-7 847359-86-8
847359-87-9 847359-88-0 847359-89-1 847359-90-4 847359-91-5
847359-92-6
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor*** electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor*** **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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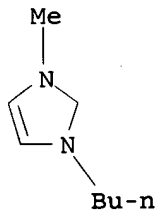
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 11 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:181608 HCAPLUS
DN 142:243676
TI Film type pigment sensitized photoelectrochemical cell
IN Miyasaka, Isamu
PA Toin University of Yokohama, Japan
SO Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005056627	A2	20050303	JP 2003-284549	20030731 <--
PRAI JP 2003-284549		20030731 <--		

AB The title cell, which is a mech. flexible photoelectrochem. cell, has a laminated structure, composed of an ion-conductive electrolyte between an electrode, having a pigment-sensitized porous semiconductor particle layer loaded on a transparent conductive plastic support, and a counter electrode; where the plastic support has a surface resistance ≤3 Ω/.box.; and the semiconductor particle layer consists of a semiconductor, an inorg. oxide, and a pigment and has a porosity 50-85%. Another type of has an optional separator, between the plastic support and the electrolyte, for preventing short-cut.

IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST flexible pigment sensitized photoelectrochem cell structure semiconductor electrode
IT Polyesters, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(semiconductor electrodes porous semiconductor particle layer loaded conductive plastic supports for pigment sensitized photoelectrochem. cells)
IT 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7553-56-2, uses 9002-88-4, Polyethylene 9020-32-0 9020-73-9, Polyethylene naphthalate 13463-67-7, Titania, uses 25322-68-3, Polyethylene glycol 50926-11-9, ITO **65039-05-6** 118676-08-7, tert-Butyl pyridine **143314-16-3**
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** porous semiconductor particle layer loaded conductive plastic supports for pigment sensitized photoelectrochem. cells)
IT **65039-05-6 143314-16-3**
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** porous semiconductor particle layer loaded conductive plastic supports for pigment sensitized photoelectrochem. cells)
RN 65039-05-6 HCAPLUS
CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



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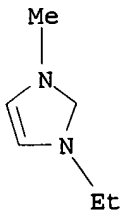
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RN 143314-16-3 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

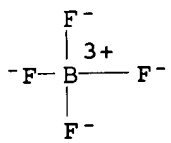
CRN 65039-03-4
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



L53 ANSWER 12 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:116616 HCAPLUS
DN 142:201601
TI Method for forming porous metal compound thin film and organic pigment sensitized photoelectrochemical cell
IN Iwabuchi, Yoshinori; Kamei, Masayuki; Yoshikawa, Masato
PA Bridgestone Corp., Japan; National Institute of Materials Science
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005039013	A2	20050210	JP 2003-199300	20030718 <--
PRAI JP 2003-199300		20030718 <--		

AB The method is carried out by forming a composite thin film, comprising a mixed dispersion of a 1st component composed of a metal or a metal compound and a 2nd component composed of a metal compound different from the 1st component, with different composition ratio of the 1st component and the 2nd component varied in its thickness direction, on a substrate; and selectively removing the 1st component. The solar cell uses a semiconductor electrode, containing the above film.
IC ICM H01L031-04
ICS C23C014-08; C23C014-58; H01M014-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell semiconductor electrode metal compd metal composite film
IT Photoelectrochemical cells
Semiconductor materials
(formation of porous metal compound composite films in semiconductor

electrodes for photoelectrochem. cells)

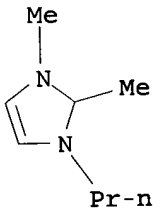
IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(formation of porous metal compound composite films in semiconductor electrodes for photoelectrochem. cells)

IT 1332-29-2D, Tin oxide, F-doped 7440-66-6, Zinc, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titanium oxide, uses 118676-08-7, tert-Butyl pyridine **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(formation of porous metal compound composite films in semiconductor **electrodes** for photoelectrochem. cells)

IT 141460-19-7
RL: MOA (Modifier or additive use); USES (Uses)
(formation of porous metal compound composite films in semiconductor electrodes for photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(formation of porous metal compound composite films in semiconductor **electrodes** for photoelectrochem. cells)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 13 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:57685 HCAPLUS
DN 142:159519
TI Semiconductor electrode and photoelectric converter which uses the electrode
IN Horiuchi, Tamotsu; Miura, Hidetoshi
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005019254	A2	20050120	JP 2003-183497	20030626 <--
PRAI JP 2003-183497		20030626 <--		

AB The electrode has a semiconductor layer coated on a surface-conductive substrate and a pigment adsorbed on the semiconductor layer; where the electrode contains ≥1 pigment, having an oxidation potential of ≤1.20 V vs. a standard calomel electrode and a reduction potential of

≥-1.60 V vs. the standard calomel electrode. The converter, especially for a photoelectrochem. cell, uses the above electrode.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell photoelec converter semiconductor pigment adsorbed semiconductor layer; semiconductor electrode sensitizing pigment control oxidn redn potential

IT Photoelectric devices
(converters; semiconductor electrodes containing pigments with controlled oxidation-reduction potentials for photoelec. converters in photoelectrochem.
cells)

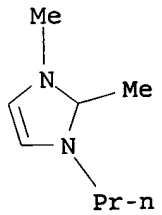
IT Photoelectrochemical cells
(semiconductor electrodes containing pigments with controlled oxidation-reduction
potentials for photoelec. converters in photoelectrochem. cells)

IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing pigments with controlled oxidation-reduction potentials for photoelec. converters in photoelectrochem.
cells)

IT 405111-66-2 828943-52-8
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor electrodes containing pigments with controlled oxidation-reduction
potentials for photoelec. converters in photoelectrochem. cells)

IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing pigments with controlled oxidation-reduction potentials for photoelec. converters in photoelectrochem.
cells)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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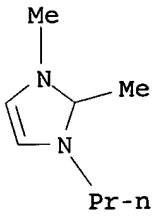
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 14 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:57684 HCAPLUS
DN 142:159518

TI Semiconductor electrode and photoelectric converter which uses the electrode
IN Miura, Hidetoshi; Nagamura, Hideki
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 27 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005019253	A2	20050120	JP 2003-183496	20030626 <--
PRAI JP 2003-183496		20030626 <--		

AB The electrode has a semiconductor layer on a surface-conductive substrate and a pigment adsorbed on the semiconductor layer; where the electrode has ≥1 sensitizing pigment, forming mol. aggregates, adsorbed on the semiconductor layer. The converter, especially for a photoelectrochem. cell, uses the above electrode.
IC ICM H01M014-00
ICS H01L031-04; C09B017-00; C09B023-00; C09B057-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell photoelec converter semiconductor pigment adsorbed semiconductor layers
IT Photoelectric devices
(converters; semiconductor electrodes containing pigment adsorbed semiconductor layers for photoelec. converters in photoelectrochem. cells)
IT Photoelectrochemical cells
(semiconductor electrodes containing pigment adsorbed semiconductor layers for photoelec. converters in photoelectrochem. cells)
IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing pigment adsorbed semiconductor layers for photoelec. converters in photoelectrochem. cells)
IT 652145-28-3
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor electrodes containing pigment adsorbed semiconductor layers for photoelec. converters in photoelectrochem. cells)
IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing pigment adsorbed semiconductor layers for photoelec. converters in photoelectrochem. cells)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 15 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:57683 HCAPLUS
DN 142:159517
TI The photoelectric conversion material, semiconductor electrode and photoelectric converter which uses the electrode
IN Horiuchi, Tamotsu; Kodera, Tatsuya
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005019252	A2	20050120	JP 2003-183494	20030626 <--
PRAI JP 2003-183494		20030626 <--		

OS MARPAT 142:159517
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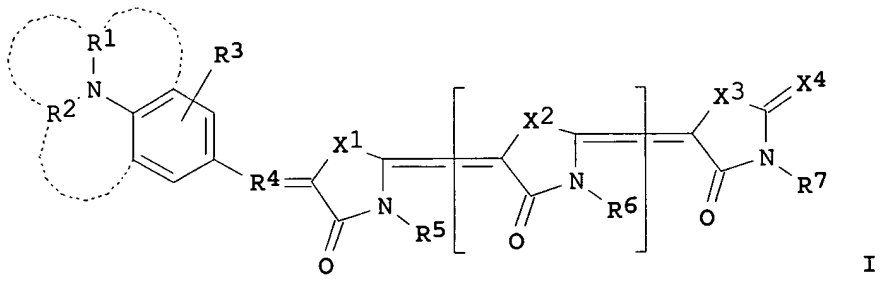


I

AB The material uses a compound I [R1 = (substituted) alkyl, (substituted) aralkyl, (substituted) alkenyl, (substituted) allyl, or (substituted) heterocyclic ring; R2 = linking group forming a structure with N; R1 and R2 may form a ring; R2, N and bonded benzene ring may bond to form a ring; R3 = H, halo, (substituted) alkyl, or (substituted) alkoxy group; R4 = bivalent linking group; R5-7 = (substituted) alkyl, (substituted) allyl, or (substituted) heterocyclic ring; X1-3 = O, S, or Se; X4 = O, S, cyanoacetate, or dicyano methylene group; n = 0 or 1; and C-C double bond may be E type or Z type]. The electrode has a semiconductor layer coated on a surface-conductive substrate and a pigment adsorbed on the

semiconductor layer; where the pigment contains ≥1 above compound I. The converter, especially for a photoelectrochem. cell, uses the above electrodes.

IC ICM H01M014-00
ICS C07D417-14; H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment compd semiconductor electrode photoelec converter

IT Photoelectric devices
(converters; semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

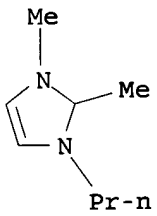
IT Photoelectrochemical cells
(semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT 829362-58-5 829362-66-5 829362-74-5
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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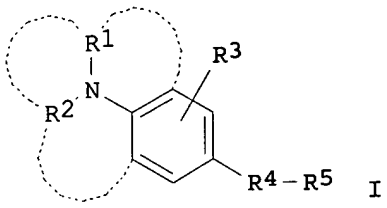
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 16 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:57682 HCAPLUS
DN 142:159516
TI The photoelectric conversion material, semiconductor electrode and photoelectric converter which uses the electrode
IN Horiuchi, Tamotsu; Maruyama, Atsushi
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005019251	A2	20050120	JP 2003-183493	20030626 <--
PRAI	JP 2003-183493		20030626 <--		

OS MARPAT 142:159516

GI



I

AB The material uses a compound I [R1 = (substituted) alkyl, (substituted) aralkyl, (substituted) alkenyl, (substituted) allyl, or (substituted) heterocyclic ring; R2 = linking group forming a structure with N; R1 and R2 may form a ring; R2, N and bonded benzene ring may bond to form a ring; R3 = H, halo, (substituted) alkyl, or (substituted) alkoxy group; R4 = bivalent aromatic condensed ring or bivalent heterocyclic ring ; R5 = = substituent having acidic group]. The electrode has a semiconductor layer coated on a surface-conductive substrate and a pigment adsorbed on the semiconductor layer; where the pigment contains ≥1 above compound I. The converter, especially for a photoelectrochem. cell, uses the above electrodes.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment compd semiconductor electrode photoelec converter

IT Photoelectric devices
(converters; semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT Photoelectrochemical cells
(semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

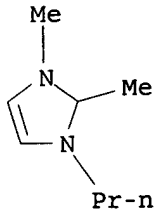
IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT 829097-67-8 829097-74-7
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



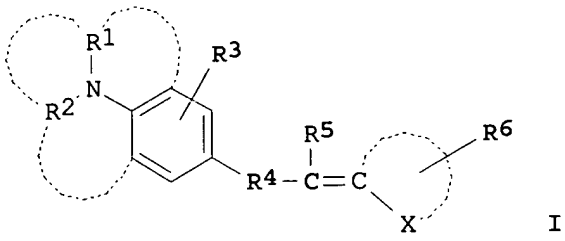
● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 17 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:57681 HCAPLUS
DN 142:159515
TI The photoelectric conversion material, semiconductor electrode and photoelectric converter which uses the electrode
IN Horiuchi, Tamotsu; Azuma, Yoichiro
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005019250	A2	20050120	JP 2003-183492	20030626 <--
PRAI JP 2003-183492		20030626 <--		

OS MARPAT 142:159515
GI



I

AB The material uses a compound I [R1 = (substituted) alkyl, (substituted) aralkyl, (substituted) alkenyl, (substituted) allyl, or (substituted) heterocyclic ring; R2 = linking group forming a structure with N; R1 and R2 may form a ring; R2, N and bonded benzene ring may bond to form a ring; R3 = H, halo, (substituted) alkyl, or (substituted) alkoxy group; R4 = direct bond or bivalent linking group; R5 = H, (substituted) alkyl, (substituted) alkoxy, (substituted) (substituted) alkylthio, (substituted) allyl, or (substituted) heterocyclic ring ; R6 = substituent having acidic group; X = sulfonyl or sulfoxide group and may form a ring; and C-C double bond may be E type or Z type]. The electrode has a semiconductor layer coated on a surface-conductive substrate and a pigment adsorbed on the

semiconductor layer; where the pigment contains ≥1 above compound I. The converter, especially for a photoelectrochem. cell, uses the above electrodes.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment compd semiconductor electrode photoelec converter

IT Photoelectric devices
(converters; semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT Photoelectrochemical cells
(semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

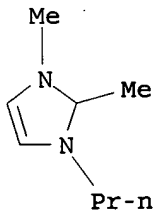
IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT 829043-86-9 829043-95-0
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor electrodes containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigments for photoelec. converters in photoelectrochem. cells)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 18 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:57680 HCAPLUS

DN 142:159514

TI The photoelectric conversion material, semiconductor electrode and photoelectric converter which uses the electrode

IN Horiuchi, Tamotsu; Sano, Hidekazu

PA Mitsubishi Paper Mills, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF

DT Patent

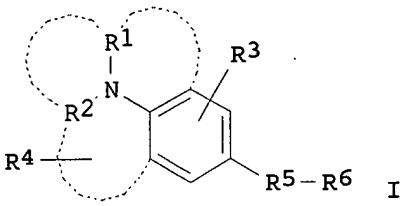
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005019249	A2	20050120	JP 2003-183491	20030626 <--
PRAI	JP 2003-183491		20030626 <--		

OS MARPAT 142:159514

GI



I

AB The material uses a compound I [R1 = (substituted) alkyl, (substituted) aralkyl, (substituted) alkenyl, (substituted) allyl, or (substituted) heterocyclic ring; R2 = linking group forming a structure with N; R1 and R2 may form a ring; R2, N and bonded benzene ring may bond to form a ring; R3, R4= H, halo, (substituted) alkyl, or (substituted) alkoxy group; R5 = direct bond or bivalent linking group; R6 = H, (substituted) alkyl, (substituted) alkoxy, (substituted) alkylene, (substituted) allyl, or (substituted) heterocyclic ring; and R1 and/or R4 contains an acidic group]. The electrode has a semiconductor layer coated on a surface-conductive substrate and a pigment adsorbed on the semiconductor layer; where the pigment contains ≥1 above compound I. The converter, especially for a photoelectrochem. cell, uses the above electrodes.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST pigment compd semiconductor electrode photoelec converter

IT Photoelectric devices
(converters; semiconductor electrodes containing sensitizing pigment compds. for photoelec. converters in photoelectrochem. cells)

IT Photoelectrochemical cells
(semiconductor electrodes containing sensitizing pigment compds. for photoelec. converters in photoelectrochem. cells)

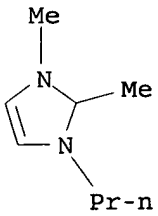
IT 1332-29-2D, Tin oxide, F doped 7440-06-4, Platinum, uses 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigment compds. for photoelec. converters in photoelectrochem. cells)

IT 828943-63-1 828943-64-2
RL: MOA (Modifier or additive use); USES (Uses)
(semiconductor electrodes containing sensitizing pigment compds. for photoelec. converters in photoelectrochem. cells)

IT **218151-78-1**, 1,2-Dimethyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** containing sensitizing pigment compds. for photoelec. converters in photoelectrochem. cells)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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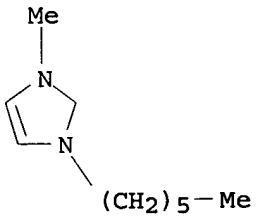
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 19 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:34055 HCAPLUS
DN 142:117662
TI Photoelectrodes and their counter electrodes for photoelectric cells, preparation of same cells, and dye-sensitized solar cells comprising same
IN Inoue, Teruhisa; Shigaki, Koichiro; Ikeda, Masaaki
PA Nippon Kayaku Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2005011609	A2	20050113	JP 2003-172952	20030618 <--
PRAI JP 2003-172952		20030618 <--		

AB The photoelectrodes and their counter electrodes comprise substrates, transparent conductive films, current-collecting electrodes, and semiconductor layers or reduced layers, successively in this order. Preferably, the current-collecting electrodes are of thin films, net-shaped, linearly-shaped, or lattice-shaped, and are made of Au, Pt, Ag, Cu, Al, Ni, Zn, Ti, and/or Cr. In preparation of the photoelec. cells, the photoelectrodes and counter electrodes are disposed apart from a distance from each other, and their periphery are fixed by sealing materials, and then charge-transport layers are formed in-between the photoelectrodes and the counter electrodes. By arranging the current-controlling electrodes, inner resistivity of the photoelec. cells is lowered.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST dye sensitized solar cell photoelectrode current collector; counter electrode dye sensitized solar cell
IT Solar cells
(dye-sensitized; photoelectrodes and their counter electrodes for dye-sensitized solar cells)
IT Photoelectric cell electrodes
Photoelectrodes
(photoelectrodes and their counter electrodes for dye-sensitized solar cells)
IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(P 25, semiconductors in photoelectrodes; photoelectrodes and their

counter electrodes for dye-sensitized solar cells)
IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-32-6, Titanium, uses 7440-47-3, Chromium, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses
RL: DEV (Device component use); USES (Uses)
(current-collecting electrodes; photoelectrodes and their counter electrodes for dye-sensitized solar cells)
IT 7782-41-4, Fluorine, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(dopant, tin oxide glass containing, transparent conductive films; photoelectrodes and their counter electrodes for dye-sensitized solar cells)
IT 207347-46-4, N 719 396087-20-0
RL: DEV (Device component use); USES (Uses)
(dyes in photoelectrodes; photoelectrodes and their counter electrodes for dye-sensitized solar cells)
IT 1332-29-2, Tin oxide 155090-83-8, PEDOT PSS
RL: DEV (Device component use); USES (Uses)
(glass, fluorine-doped, transparent conductive films; photoelectrodes and their counter electrodes for dye-sensitized solar cells)
IT 631-40-3, Tetrapropylammonium iodide 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide **178631-05-5**
RL: **DEV (Device component use)**; USES (Uses)
(in electrolyte layers; photoelectrodes and their counter **electrodes** for dye-sensitized solar cells)
IT **178631-05-5**
RL: **DEV (Device component use)**; USES (Uses)
(in electrolyte layers; photoelectrodes and their counter **electrodes** for dye-sensitized solar cells)
RN 178631-05-5 HCAPLUS
CN 1H-Imidazolium, 1-hexyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 20 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:876583 HCAPLUS
DN 141:368343
TI Optically functional material, sensitizing pigment for photoelectric conversion, photoelectric conversion material, photoelectric conversion electrode, and photoelectrochemical cell.
IN Ando, Munenori; Yagi, Tamao; Kurata, Ryuichiro
PA Toyo Ink Mfg. Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 32 pp.

CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004292743	A2	20041021	JP 2003-90143	20030328 <--
PRAI	JP 2003-90143		20030328 <--		

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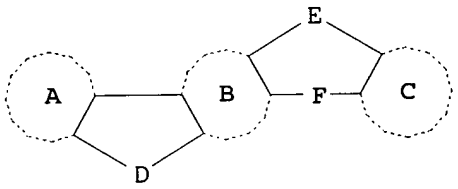


I

AB The functional material contains a substructure I [A, B, and C= 5-20 member aromatic ring or heterocycle; D = CR1R2; C = R3, NR1, N+R1R2, BR1, B-R1R2, or SiR1R2; R1 and R2 = H or monovalent organic residue; and R3 = divalent organic residue; E = CR4R5; C = R6, NR4, N+R4R5, BR1, B-R4R5, or SiR4R5; R4 and R5 = H or monovalent organic residue; and R6 = divalent organic residue] and an acidic substituent, its salt, or an ester derivative The pigment contains the above material. The photoelec. conversion material is obtained by linking the above pigment to an inorg. semiconductor porous material. The claimed electrode is obtained by laminating the photoelec. conversion material on a transparent electrode. The claimed cell has the above electrode, an electrolyte layer, and a conductive counter electrode.

IC ICM C09B023-00
ICS C09B057-00; H01L031-04; C07C255-30

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell electrode sensitizing pigment

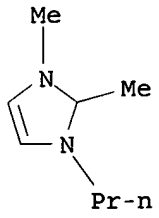
IT Dyes
Photoelectrochemical cells
Photoelectrodes
(compns. of optically functional material as sensitizing pigments for solar cell electrodes)

IT 1314-23-4, Zirconia, uses 1332-29-2D, Tin oxide, F doped 3978-81-2, 4-t-Butyl pyridine 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell **electrodes**)

IT 779357-68-5 779357-69-6 779357-70-9
RL: MOA (Modifier or additive use); USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell electrodes)

IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell **electrodes**)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 21 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:874137 HCAPLUS
DN 141:368286
TI Photosensitization solar array
IN Mikoshiba, Satoru; Sumino, Hiroyasu; Murai, Shinji
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004296373	A2	20041021	JP 2003-90185	20030328 <--
PRAI JP 2003-90185		20030328 <--		

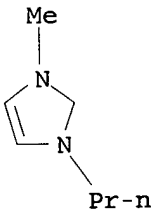
AB The device comprises a semiconductor electrode with its surface coated by a color pigment and a counter substrate spaced from the semiconductor electrode with its surface coated with an elec. conductive layer. Between the semiconductor electrode and the elec. conductive layer, spherical insulation particles with an average particle size of 40-800 nm and a long/short diameter ratio ≤1.2 and an electrolyte layer consisting of iodine mol. and iodide are disposed. The insulation particles are made of ceramics and take 0.05-2 (vol)% in the electrolyte layer.
IC ICM H01M014-00
ICS H01L031-04
CC 52-1 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76
ST photosensitization solar array semiconductor electrode elec conductive layer
IT Ceramics
Semiconductor materials
(photosensitization solar array having semiconductor electrode and elec. conductive layer)
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(photosensitization solar array having semiconductor electrode and elec. conductive layer)
IT Solar cells
(photosensitization; photosensitization solar array having semiconductor electrode and elec. conductive layer)
IT 7553-56-2, Iodine, uses 7631-86-9, Silica, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 25038-59-9, Pet, uses 50926-11-9, Ito **119171-18-5**, 1-Methyl-3-propylimidazolium iodide

141460-19-7 **178631-05-5**
RL: **DEV (Device component use)**; USES (Uses)
(photosensitization solar array having semiconductor **electrode** and elec. conductive layer)

IT 9003-47-8, Polyvinylpyridine
RL: TEM (Technical or engineered material use); USES (Uses)
(photosensitization solar array having semiconductor electrode and elec. conductive layer)

IT **119171-18-5**, 1-Methyl-3-propylimidazolium iodide
178631-05-5
RL: **DEV (Device component use)**; USES (Uses)
(photosensitization solar array having semiconductor **electrode** and elec. conductive layer)

RN 119171-18-5 HCAPLUS
CN 1H-Imidazolium, 1-methyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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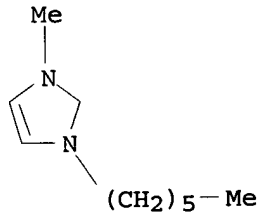
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 178631-05-5 HCAPLUS
CN 1H-Imidazolium, 1-hexyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



● I^-

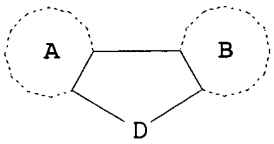
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 22 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:873948 HCAPLUS
DN 141:368328
TI Optically functional material, sensitizing pigment for photoelectric conversion, photoelectric conversion material, photoelectric conversion electrode, and photoelectrochemical cell.
IN Yagi, Tamao; Ando, Munenori; Kurata, Ryuichiro
PA Toyo Ink Mfg. Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 35 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004292744	A2	20041021	JP 2003-90144	20030328 <--

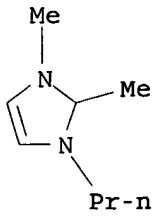
PRAI JP 2003-90144 20030328 <--
GI



I

AB The functional material contains a substructure I [A and B = 5-20 member aromatic ring or heterocycle; D = ER1R2H; E = R3, NR1, N+R1R2, BR1, B-R1R2, or SiR1R2; R1 and R2 = H or monovalent organic residue; R1 and R2 will not be H at same time; and R3 = divalent organic residue] and an acidic substituent, its salt, or an ester derivative The pigment contains the above material. The photoelec. conversion material is obtained by linking the above pigment to an inorg. semiconductor porous material. The claimed electrode is obtained by laminating the photoelec. conversion material on a transparent electrode. The claimed cell has the above electrode, an electrolyte layer, and a conductive counter electrode.

IC ICM C09B023-00
ICS C09B005-62; C09B045-10; C09B047-00; C09B047-12; C09B048-00; C09B053-00; C09B055-00; C09B056-16; C09B057-00; C09B057-08; C09B057-10; H01L031-04; H01M014-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell electrode sensitizing pigment
IT Dyes
Photoelectrochemical cells
Photoelectrodes
(compns. of optically functional material as sensitizing pigments for solar cell electrodes)
IT 1314-23-4, Zirconia, uses 1332-29-2D, Tin oxide, F doped 3978-81-2, 4-t-Butyl pyridine 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell **electrodes**)
IT 779357-62-9 779357-63-0 779357-64-1 779357-65-2 779357-66-3
RL: MOA (Modifier or additive use); USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell electrodes)
IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell **electrodes**)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)

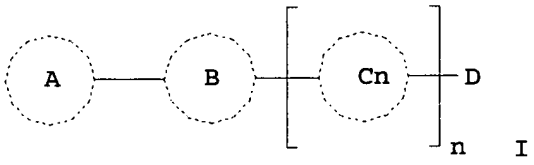


ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 23 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:873947 HCAPLUS
DN 141:368327
TI Optically functional material, sensitizing pigment for photoelectric conversion, photoelectric conversion material, photoelectric conversion electrode, and photoelectrochemical cell.
IN Ando, Munenori; Yagi, Tamao; Kurata, Ryuichiro
PA Toyo Ink Mfg. Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004292742	A2	20041021	JP 2003-90142	20030328 <--
PRAI JP 2003-90142		20030328 <--		

GI



AB The functional material contains a substructure I [n (integer)≥ 0; Ring A, B, C = 5-16 member aromatic ring; D = H or monovalent organic residue] and an acidic substituent, its salt, or an ester derivative The pigment contains the above material. The photoelec. conversion material is obtained by linking the above pigment to an inorg. semiconductor porous material. The claimed electrode is obtained by laminating the photoelec. conversion material on a transparent electrode. The claimed cell has the above electrode, an electrolyte layer, and a conductive counter electrode.
IC ICM C09B023-00
ICS H01L031-04; H01M014-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell electrode sensitizing pigment
IT Dyes
Photoelectrochemical cells

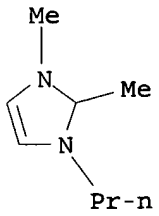
Photoelectrodes
(compns. of optically functional material as sensitizing pigments for solar cell electrodes)

IT 1332-29-2D, Tin oxide, F doped 3978-81-2, 4-t-Butyl pyridine 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell **electrodes**)

IT 779357-44-7 779357-47-0 779357-48-1 779357-49-2 779357-50-5
RL: MOA (Modifier or additive use); USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell electrodes)

IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of optically functional material as sensitizing pigments for solar cell **electrodes**)

RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



● I^-

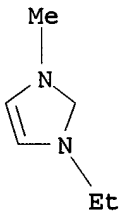
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 24 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:871280 HCAPLUS
DN 141:368313
TI Nonaqueous electrolyte battery
IN Takami, Norio; Saruwatari, Hidesato; Inagaki, Hirotaka
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004296108	A2	20041021	JP 2003-83133	20030325 <--
PRAI JP 2003-83133		20030325 <--		

AB The battery has a cathode, an anode, and a nonaq. room temperature molten salt electrolyte containing Li+; where the cathode and/or anode contains metal oxide particles containing Al2O3, ZrO2, and/or SiO2 particles, having average primary particle diameter 1-100 nm. Another structure of the battery has a cathode, an anode, and a room temperature molten salt electrolyte containing Li+ and B[(OCO)2]2-. The molten salt preferably contains a tetravalent organic ammonium ion.

IC ICM H01M004-62
ICS H01M004-02; H01M004-06; H01M006-16; H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST nonaq battery metal oxide electrode alumina zirconia silica; lithium salt molten salt electrolyte battery
IT Battery electrodes
Particle size
(particle size of alumina or zirconia or silica containing metal oxide electrode active mass for nonaq. batteries)
IT 1313-13-9, Manganese dioxide, uses 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7, Iron lithium phosphate (FeLiPO4)
RL: DEV (Device component use); USES (Uses)
(particle size of alumina or zirconia or silica containing metal oxide electrode active mass for nonaq. batteries)
IT 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
RL: MOA (Modifier or additive use); USES (Uses)
(particle size of alumina or zirconia or silica containing metal oxide electrode active mass for nonaq. batteries)
IT 14874-70-5 17341-24-1, uses 37181-39-8, Trifluoromethanesulfonate ion **65039-03-4** 98837-98-0 125579-65-9
RL: **DEV (Device component use)**; USES (Uses)
(room temperature molten electrolytes for batteries using alumina or zirconia
or silica containing metal oxide **electrode** active mass)
IT **65039-03-4**
RL: **DEV (Device component use)**; USES (Uses)
(room temperature molten electrolytes for batteries using alumina or zirconia
or silica containing metal oxide **electrode** active mass)
RN 65039-03-4 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl- (9CI) (CA INDEX NAME)



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 25 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:605443 HCAPLUS
DN 141:143194
TI Method of fabrication of membrane electrode unit for polymer electrolyte fuel cells
IN Melzner, Dieter; Reiche, Annette; Maehr, Ulrich; Kiel, Suzana
PA Sartorius Ag, Germany
SO Ger. Offen., 12 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10301810	A1	20040729	DE 2003-10301810	20030120 <--
	WO 2004066428	A2	20040805	WO 2003-EP14623	20031219 <--
	WO 2004066428	A3	20050818		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003300536	A1	20040813	AU 2003-300536	20031219 <--
	EP 1593172	A2	20051109	EP 2003-815370	20031219 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	CN 1729590	A	20060201	CN 2003-80107265	20031219 <--
	JP 2006513544	T2	20060420	JP 2004-566800	20031219 <--
	DE 202004000365	U1	20040422	DE 2004-202004000365	20040113 <--
PRAI	DE 2003-10301810	A	20030120 <--		
	WO 2003-EP14623	W	20031219 <--		

AB The invention concerns a membrane-electrode unit and polymer electrolyte fuel cell using the same for operating temperature ≤250°, as well as method of fabrication of the membrane. Membrane-electrode units of the polymer electrolyte fuel cells consist ≥2 laminar gas distribution electrodes and a sandwich-like polymer membrane (provided between the electrodes) with at least a basic polymer as well as a dopant, with which the gas distribution electrodes are in such a manner loaded that they represent a dopant reservoir for the polymer membrane, whereby the polymer membrane is proton-conductively and firmly tied up to the gas distribution electrodes over the dopant after the effect of pressure and temperature In the doped condition, it shows a conductivity of at least 0.1 S/m at a temperature of <25°. The invention is applicable directly for stationary and mobile power generation from chemical energy.

IC ICM H01M008-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST membrane electrode unit fabrication polymer electrolyte fuel cell

IT Membranes, nonbiological
(method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)

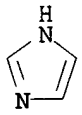
IT Epoxides
Isocyanates
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)

IT Fuel cells
(polymer electrolyte; method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)
IT 2425-79-8, 1,4-Butanedioldiglycidyl ether
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)
IT 129-00-0D, Pyrene, tetraaza derivs., polymers 298-07-7, Bis(2-ethylhexyl) phosphate 838-85-7, Diphenylphosphate 25013-01-8, Polypyridine **82370-43-2**, Polyimidazole 128611-69-8, 1,3,4-Thiadiazole homopolymer 190201-51-5, Pyrimidine, homopolymer
RL: **DEV (Device component use)**; USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte fuel cells)
IT 7664-38-2, Phosphoric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)
IT 127-19-5, Dimethylacetamide
RL: TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of membrane electrode unit for polymer electrolyte fuel cells)
IT **82370-43-2**, Polyimidazole
RL: **DEV (Device component use)**; USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte fuel cells)
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



L53 ANSWER 26 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:430096 HCAPLUS
DN 140:426073
TI Pigment sensitized solar array using carbon electrode
IN Takeda, Yasuhiko; Higuchi, Kazuo; Takeichi, Akihiro; Motohiro, Tomomi; Toyota, Tatsuo; Sano, Toshiyuki
PA Toyota Central Research and Development Laboratories, Inc., Japan; Aisin Seiki Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 35 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004152747	A2	20040527	JP 2003-332101	20030924 <--
PRAI JP 2002-299297	A	20021011 <--		

AB The solar cell comprises a C electrode enable speed redox reaction on the electrode surface and a counter electrode. The best energy conversion rate is obtained for optical radiation power varying in the range of 100 mW/cm2. The C electrode consists of C granules, granules made of column shaped elec. conductive C material, and titania granules of anatase type. The C granule has a diameter of 50-500 nm on the bottom face and a height of 1-20 μm. The mass of C granule W1, column shaped conducting C granule W2, and anatase W3 satisfy the following relationship: (1) $0.05 \leq (W1/W2) \leq 0.4$ and (2) $0.05 \leq W3/(W1/W2) \leq 0.4$.

IC ICM H01M004-96
ICS H01L031-04; H01M014-00; H01M004-58

CC 52-1 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 41, 76

ST pigment sensitized solar array carbon electrode

IT Electrodes
Pigments, nonbiological
Redox reaction
Solar cells
Surface reaction
(pigment sensitized solar array using carbon electrode)

IT Carbon fibers, uses
RL: DEV (Device component use); USES (Uses)
(pigment sensitized solar array using carbon electrode)

IT 1317-70-0, Anatase 3978-81-2, 4-tert-Butylpyridine 7440-44-0, Carbon, uses 10377-51-2, Lithium Iodide 13463-67-7, Titania, uses 18282-10-5, Tin dioxide 141460-19-7 **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(pigment sensitized solar array using carbon **electrode**)

IT 7440-36-0, Antimony, uses
RL: MOA (Modifier or additive use); USES (Uses)
(pigment sensitized solar array using carbon electrode)

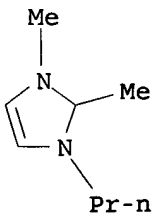
IT 50-70-4, Sorbitol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(pigment sensitized solar array using carbon electrode)

IT 25053-53-6, Ethylene-methacrylic acid copolymer
RL: DEV (Device component use); USES (Uses)
(random; pigment sensitized solar array using carbon electrode)

IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(pigment sensitized solar array using carbon **electrode**)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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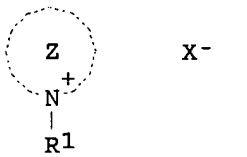
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 27 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:352032 HCAPLUS
DN 140:377997
TI Photosensitized semiconductor electrodes, photoelectric conversion devices, and solar cells with high energy efficiency
IN Otaka, Hideo; Kira, Rie; Mitekura, Hirofumi; Matsui, Fumio
PA Hayashibara Biochemical Laboratories, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004134200	A2	20040430	JP 2002-296857	20021010 <--
PRAI JP 2002-296857		20021010 <--		

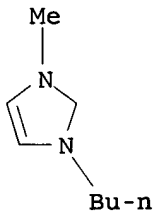
OS MARPAT 140:377997
GI



I

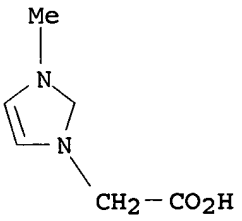
AB The electrodes comprise semiconductor layers containing organic pigments as photosensitizers and onium salts having neg. chargeable groups, e.g. I (Z = (un)substituted heterocycles containing ≥1 N; R1 = (un)substituted hydrocarbon; Z and/or R1 is substituted with neg. chargeable group; X- = counter ion). Photoelec. conversion devices, e.g. solar cells, comprising the said electrodes and electrolyte layers containing ionic liqs. are also claimed. The devices show improved photoelec. conversion efficiency. Small-sized solar cells can be obtained.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST solar cell ionic liq electrolyte semiconductor electrode; semiconductor electrode photosensitization onium salt contg
IT Ionic liquids
(electrolyte layers containing; photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT Solar cells
(photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT Onium compounds
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT Dyes
(photosensitizing; photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)

IT Electrodes
(semiconductive; photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT 7553-56-2, Iodine, uses **65039-05-6**
RL: **DEV (Device component use)**; USES (Uses)
(electrolyte layers containing; photosensitized semiconductor **electrodes** containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT 683228-06-0P **683228-07-1P**
RL: **DEV (Device component use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(photosensitized semiconductor **electrodes** containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT 55-22-1, Isonicotinic acid, reactions 64-69-7 616-47-7, 1-Methylimidazole 629-27-6, Octyl iodide
RL: RCT (Reactant); RACT (Reactant or reagent)
(photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT 75983-37-8 625857-45-6 683228-08-2
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(photosensitizer; photosensitized semiconductor electrodes containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
IT **65039-05-6**
RL: **DEV (Device component use)**; USES (Uses)
(electrolyte layers containing; photosensitized semiconductor **electrodes** containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
RN 65039-05-6 HCAPLUS
CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
IT **683228-07-1P**
RL: **DEV (Device component use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(photosensitized semiconductor **electrodes** containing neg. chargeable onium salts for solar cells comprising ionic liquid-containing electrolyte layers)
RN 683228-07-1 HCAPLUS
CN 1H-Imidazolium, 1-(carboxymethyl)-3-methyl-, iodide (9CI) (CA INDEX NAME)



● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 28 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:328921 HCAPLUS
DN 140:342159
TI Polymer membranes for a membrane-electrode unit for fuel cell
PA Sartorius A.-G., Germany
SO Ger. Gebrauchsmusterschrift, 12 pp.
CODEN: GGXXFR
DT Patent
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 202004000365	U1	20040422	DE 2004-202004000365	20040113 <--
	DE 10301810	A1	20040729	DE 2003-10301810	20030120 <--
PRAI	DE 2003-10301810	IA	20030120 <--		

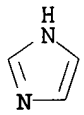
AB A membrane-electrode unit for polymer electrolyte fuel cells with an operating temperature ≤250° consists at least of two laminar gas distribution electrodes and a sandwich-like in-between arranged polymer membrane with ≥1 basic polymer as well as a dopant, provided between them. The gas distribution electrodes are so charged that they represent a dopant reservoir for the polymer membrane, whereby the polymer membrane is proton-conductive and firmly tied up to the gas distribution electrodes over the dopant after effect of pressure and temperature and has in the doped condition a conductivity of at least 0.1 S/m at a temperature of >25°.

IC ICM H01M008-02
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer membrane electrode unit fuel cell
IT Membranes, nonbiological
(polymer membranes for membrane-electrode unit for fuel cell)
IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(polymer membranes for membrane-electrode unit for fuel cell)
IT Fuel cells
(solid electrolyte; polymer membranes for membrane-electrode unit for fuel cell)
IT 2425-79-8, 1,4-Butanediol diglycidyl ether
RL: CPS (Chemical process); PEP (Physical, engineering or chemical

process); PROC (Process)
(polymer membranes for membrane-electrode unit for fuel cell)
IT 298-07-7, Di(2-ethylhexyl) phosphate 838-85-7, Diphenyl phosphate
7440-06-4, Platinum, uses 7664-38-2D, Phosphoric acid, diester
25013-01-8, Polypyridine **82370-43-2**, Polyimidazole
128611-69-8, 1,3,4-Thiadiazole homopolymer 190201-51-5, Pyrimidine
homopolymer
RL: **DEV (Device component use)**; USES (Uses)
(polymer membranes for membrane-**electrode** unit for fuel cell)
IT 7664-38-2, Phosphoric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polymer membranes for membrane-electrode unit for fuel cell)
IT **82370-43-2**, Polyimidazole
RL: **DEV (Device component use)**; USES (Uses)
(polymer membranes for membrane-**electrode** unit for fuel cell)
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2

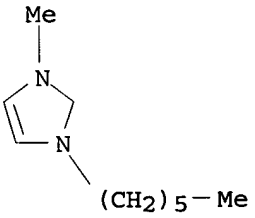


L53 ANSWER 29 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:305616 HCAPLUS
DN 140:342112
TI Pigment sensitized photoelectrochemical cell and its manufacture
IN Mikoshiba, Satoru; Sumino, Hiroyasu; Murai, Shinji
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

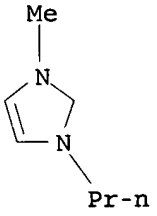
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004119279	A2	20040415	JP 2002-283528	20020927 <--
PRAI JP 2002-283528		20020927 <--		

AB The title cell has a semiconductor electrode, a counter electrode, and an electrolyte composition; where the semiconductor has a film: comprising a pigment and ≥1 organic compound, selected from F containing alkoxysilanes, F containing chlorosilanes, F containing silanols, F containing pyridines, and F containing
imidazoles; on a part of its surface. The cell is manufactured by adsorbing a pigment onto the surface of a semiconductor electrode; immersing the semiconductor electrode in a solution containing the above organic compound or exposing the semiconductor electrode in the organic compound steam atmospheric
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell semiconductor electrode pigment org compd

IT Photoelectrochemical cells
(manufacture of photoelectrochem. cells containing organic compound films on semiconductor electrodes)
IT 429-60-7, 3,3,3-Trifluoropropyl trimethoxy silane 2487-90-3D, fluroalkyl derivs. 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide 13463-67-7, Titania, uses 18282-10-5D, Tin oxide (SnO2), F doped **85100-82-9** 85857-16-5 118676-08-7, tert-Butyl pyridine **119171-18-5**, 1-Methyl-3-propyl imidazolium iodide 121643-44-5 141460-19-7 679837-90-2
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of photoelectrochem. cells containing organic compound films on semiconductor **electrodes**)
IT **85100-82-9 119171-18-5**, 1-Methyl-3-propyl imidazolium iodide
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of photoelectrochem. cells containing organic compound films on semiconductor **electrodes**)
RN 85100-82-9 HCAPLUS
CN 1H-Imidazolium, 1-hexyl-3-methyl- (9CI) (CA INDEX NAME)



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RN 119171-18-5 HCAPLUS
CN 1H-Imidazolium, 1-methyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 30 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:117315 HCAPLUS
DN 140:149157
TI An electrode for an electrochemical cell like a secondary battery and an electric double layer capacitor
IN Nobuta, Tomoki; Nishiyama, Toshihiko; Kamisuki, Hiroyuki; Kaneko, Shinako; Kurosaki, Masato; Nakagawa, Yuji; Mitani, Masaya
PA NEC Tokin Corporation, Japan

applicant

SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1388906	A2	20040211	EP 2003-16458	20030722 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004127920	A2	20040422	JP 2003-198660	20030717 <--
JP 3701952	B2	20051005		
CN 1481042	A	20040310	CN 2003-152651	20030804 <--
US 2004029003	A1	20040212	US 2003-634607	20030805 <--
HK 1060654	A1	20051125	HK 2004-102952	20040427 <--
PRAI JP 2002-227160	A	20020805 <--		

AB This invention provides an electrode for an electrochem. cell in which an active material in an electrode material is a proton-conducting compound, wherein the electrode material comprises a nitrogen-containing heterocyclic compound or a polymer having a unit containing a nitrogen-containing heterocyclic moiety.

IC ICM H01M004-60
ICS H01M004-02
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27, 38, 72, 76
ST battery electrode nitrogen contg heterocyclic compd; elec double layer capacitor electrode nitrogen contg heterocyclic compd
IT Capacitors
(double layer; electrode for electrochem. cell like secondary battery and elec. double layer capacitor)
IT Battery cathodes
Battery electrodes
Capacitor electrodes
Secondary batteries
(electrode for electrochem. cell like secondary battery and elec. double layer capacitor)
IT Carbon black, uses
Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrode for electrochem. cell like secondary battery and elec. double layer capacitor)
IT Heterocyclic compounds
RL: DEV (Device component use); USES (Uses)
(nitrogen; electrode for electrochem. cell like secondary battery and elec. double layer capacitor)
IT Heterocyclic compounds
RL: DEV (Device component use); USES (Uses)
(polymers, nitrogen-containing; electrode for electrochem. cell like secondary battery and elec. double layer capacitor)
IT Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; electrode for electrochem. cell like secondary battery and elec. double layer capacitor)
IT **51-17-2**, Benzimidazole **51-17-2D**, Benzimidazole, derivative
288-13-1, Pyrazole **288-13-1D**, Pyrazole, derivative
288-32-4, Imidazole, uses **288-32-4D**, Imidazole, derivative
288-88-0, 1H-1,2,4-Triazole **670-96-2**, 2-Phenylimidazole
20154-03-4, 3-Trifluoromethylpyrazole 25232-42-2,

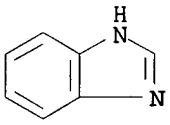
Polyvinylimidazole 37306-44-8, Triazole 37306-44-8D, Triazole, derivative
420784-28-7, 1H-Indole trimer 652968-46-2 652968-47-3
652968-48-4
RL: **DEV (Device component use)**; USES (Uses)
(**electrode** for electrochem. cell like secondary battery and elec. double layer capacitor)

IT 24937-79-9, Polyfluorovinylidene
RL: MOA (Modifier or additive use); USES (Uses)
(electrode for electrochem. cell like secondary battery and elec. double layer capacitor)

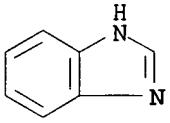
IT 7440-44-0, Carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(vapor-grown; electrode for electrochem. cell like secondary battery and elec. double layer capacitor)

IT **51-17-2**, Benzimidazole **51-17-2D**, Benzimidazole, derivative
288-13-1, Pyrazole **288-13-1D**, Pyrazole, derivative
288-32-4, Imidazole, uses **288-32-4D**, Imidazole, derivative
288-88-0, 1H-1,2,4-Triazole **670-96-2**, 2-Phenylimidazole
20154-03-4, 3-Trifluoromethylpyrazole **652968-48-4**
RL: **DEV (Device component use)**; USES (Uses)
(**electrode** for electrochem. cell like secondary battery and elec. double layer capacitor)

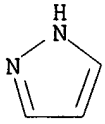
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



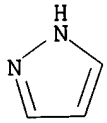
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



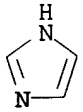
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



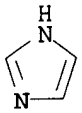
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



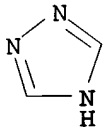
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



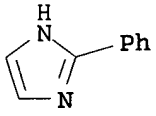
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



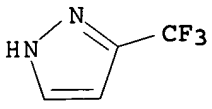
RN 288-88-0 HCAPLUS
CN 1H-1,2,4-Triazole (7CI, 9CI) (CA INDEX NAME)



RN 670-96-2 HCAPLUS
CN 1H-Imidazole, 2-phenyl- (9CI) (CA INDEX NAME)



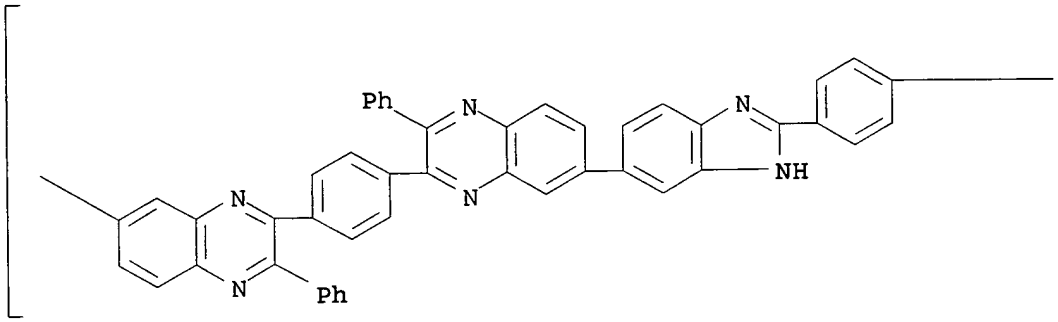
RN 20154-03-4 HCAPLUS
CN 1H-Pyrazole, 3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



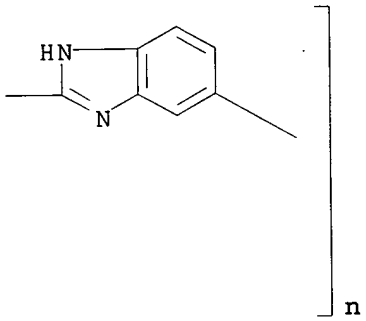
RN 652968-48-4 HCAPLUS
CN Poly[(3-phenyl-7,2-quinoxalinediyl)-1,4-phenylene(3-phenyl-2,7-

quinoxalinediyl)-1H-benzimidazole-5,2-diyl-1,4-phenylene-1H-benzimidazole-2,5-diyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L53 ANSWER 31 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:57897 HCAPLUS
DN 140:131078
TI Electrode for secondary battery, its manufacture and the battery
IN Koyama, Hiroshi
PA Toyota Motor Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004022294	A2	20040122	JP 2002-174550	20020614 <--
PRAI JP 2002-174550		20020614 <--		

AB The electrode is manufactured by preparing an electrode paste containing an active mass and an ordinary-temperature molten salt; and forming an active mass layer by using the paste. The electrode has an active mass layer containing an active mass and an ordinary-temperature molten salt; where the particle pores of the active mass are debubbled. The battery has an ordinary-temperature molten

salt based electrolyte layer between a cathode and an anode; where the cathode and/or the anode uses the above electrode.

IC ICM H01M004-02
ICS H01M004-62; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST secondary battery ordinary temp molten salt electrode manuf

IT Battery electrodes
Secondary batteries
(manufacture of electrodes containing ordinary-temperature molten salts for secondary batteries)

IT 12031-95-7, Lithium titanium oxide (Li4Ti5O12)
RL: DEV (Device component use); USES (Uses)
(anode; manufacture of electrodes containing ordinary-temperature molten salts for secondary batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(cathode; manufacture of electrodes containing ordinary-temperature molten salts for secondary batteries)

IT 25013-01-8, Polypyridine 90076-65-6 **174899-82-2**
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of **electrodes** containing ordinary-temperature molten salts for secondary batteries)

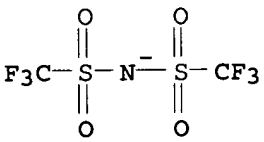
IT **174899-82-2**
RL: **DEV (Device component use)**; USES (Uses)
(manufacture of **electrodes** containing ordinary-temperature molten salts for secondary batteries)

RN 174899-82-2 HCAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)

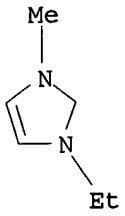
CM 1

CRN 98837-98-0
CMF C2 F6 N O4 S2



CM 2

CRN 65039-03-4
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 32 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:875559 HCAPLUS
DN 139:367552
TI Multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating
IN Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures GmbH, Germany; Pemeas GmbH
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003092090	A2	20031106	WO 2003-EP4117	20030422 <--
	WO 2003092090	A3	20050120		
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10218368	A1	20031106	DE 2002-10218368	20020425 <--
	DE 10218367	A1	20031113	DE 2002-10218367	20020425 <--
	CA 2483015	AA	20031106	CA 2003-2483015	20030422 <--
	EP 1518282	A2	20050330	EP 2003-718780	20030422 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	CN 1650463	A	20050803	CN 2003-809351	20030422 <--
	US 2005181254	A1	20050818	US 2003-512264	20030422 <--
	JP 2005527948	T2	20050915	JP 2004-500346	20030422 <--
PRAI	DE 2002-10218367	A	20020425 <--		
	DE 2002-10218368	A	20020425 <--		
	WO 2003-EP4117	W	20030422 <--		

AB Proton-conducting multi-layered electrolyte membranes for fuel cells are characterized by at least one mineral acid-doped or mineral acid-containing flat surfaces and a barrier layer for the other layer, which, together, make up a membrane electrode assembly. Preferred mineral acids include H3PO4, H2SO4, and polyphosphoric acids. The barrier layer, which preferably consists of a cation exchanger with cation-exchange capacity <0.9 meq/g and a proton conductivity <0.06 S/cm, has a thickness of 10-30 μm (preferably <10 μm). The flat surfaces of the membrane consist of a basic polymer (or a basic polymer integrated with a second polymer or an inert support), selected from polyimidazoles, polybenzimidazoles, polybenzthiazoles, polybenzoxazoles, polytriazoles, polyoxadiazoles, polythiadiazoles, polypyrazoles, polyquinoxalines, polypyridines, polypyrimidines, or poly(tetraazapyrenes). Such multilayer electrolyte membranes prevents mineral acid from being washed out and reduces the overvoltage on the cathode.
IC ICM H01M

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST multilayered electrolyte electrode membrane fuel cell; basic polymer electrolyte electrode membrane fuel cell; polybenzimidazole electrolyte electrode membrane fuel cell

IT Polyphosphoric acids
RL: TEM (Technical or engineered material use); USES (Uses)
(membrane assembly containing; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(membranes; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Fuel cell electrodes
Fuel cell electrolytes
Fuel cell separators
(multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polysulfones, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyether-, membranes; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polyketones
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated, membranes; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polyethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyketone-, sulfonated, membranes; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polyethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polysulfone-, membranes; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

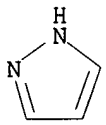
IT 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(membrane assembly containing; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT 620168-47-0, Ultrason E 7020P
RL: DEV (Device component use); USES (Uses)
(membranes; multilayered electrolyte-electrode membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

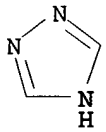
IT 110-86-1D, Pyridine, derivs., polymers **288-13-1D**, Pyrazole, derivs., polymers **288-88-0D**, 1H-1,2,4-Triazole, derivs., polymers 289-06-5D, Thiadiazole, derivs., polymers 289-95-2D, Pyrimidine, derivs., polymers 7258-75-5D, Pyrimido[4,5,6-gh]perimidine, 1,6-dihydro-, derivs., polymers 27380-27-4D, Pek, sulfonated
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT **288-13-1D**, Pyrazole, derivs., polymers **288-88-0D**, 1H-1,2,4-Triazole, derivs., polymers
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-88-0 HCAPLUS
CN 1H-1,2,4-Triazole (7CI, 9CI) (CA INDEX NAME)



L53 ANSWER 33 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:684173 HCAPLUS
DN 139:367420
TI Negative electrode for lithium battery in room temperature molten salt
AU Fung, Y. S.; Zhu, D. R.
CS Department of Chemistry, The University of Hong Kong, Hong Kong, Peop. Rep. China
SO Proceedings - Electrochemical Society (**2002**), 2002-19(Molten Salts XIII), 75-86
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB Al-coated graphite electrode and tin-coated copper electrodes were prepared and studied as neg. electrodes in LiCl buffered room temperature molten salts (RTMS) based on 1-methyl-3-ethylimidazolium chloride (MEICl) for lithium battery applications. The graphite electrode coated with Al in acidic AlCl3-MEICl melt at 4 mA/cm2 shows an increase in the reversible capacity from 26% to 57% in the 1st cycle and an improvement in the cycling performance. This is attributed to the suppression of side reactions by the Al film at the surface of the graphite. The copper electrode coated

with a thin film of tin electrodeposited from a new RTMS consisting of AlCl3/MEICl/SnCl2 shows an average capacity of 140 mAh/g, coulombic efficiency around 85 %, and >200 cycles at low c.d. of 0.4 mA/cm2. The performance of the Al-coated and tin-coated electrodes are discussed and compared.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 76

ST lithium battery electrode ionic liq imidazolium aluminum tin coating

IT Intercalation
(battery charging-discharging capacity; neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT Intercalation
(deintercalation, battery charging-discharging capacity; neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT Current density
(during charging-discharging; effect of electrodeposition conditions and duration on charging-discharging properties of Al- and Sn- coated electrodes)

IT Electric current-potential relationship
(effect of electrodeposition conditions and duration on charging-discharging properties of Al- and Sn- coated electrodes)

IT Secondary batteries
(lithium; neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT Battery cathodes
Cyclic voltammetry
Ionic liquids
(neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT Electrodeposition
(of aluminum and tin coatings on electrodes; effect of electrodeposition conditions and duration on charging-discharging properties of Al- and Sn- coated electrodes)

IT 7446-70-0, Aluminum chloride (AlCl3), uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(blends with 1-methyl-3-ethylimidazolium chloride and also with SnCl2, electrolytes; neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT 7772-99-8, Tin chloride (SnCl2), uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(blends with AlCl3/1-methyl-3-ethylimidazolium chloride, electrolyte; neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: CPS (Chemical process); **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(blends with chlorides, electrolyte; neg. **electrodes** for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT 7447-41-8, Lithium chloride (LiCl), uses
RL: DEV (Device component use); USES (Uses)
(blends with imidazolium and other chlorides, electrolyte; neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT 53680-59-4
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(formed during cycling on tin-coated electrodes; neg. electrodes for

lithium secondary batteries in imidazolium - based room temperature molten salt)

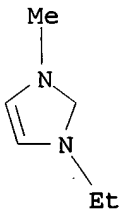
IT 7439-93-2, Lithium, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT 7440-50-8, Copper, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT 7429-90-5, Aluminum, uses 7440-31-5, Tin, uses
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(neg. electrodes for lithium secondary batteries in imidazolium - based room temperature molten salt)

IT **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: CPS (Chemical process); **DEV (Device component use)**; PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(blends with chlorides, electrolyte; neg. **electrodes** for lithium secondary batteries in imidazolium - based room temperature molten salt)

RN 65039-09-0 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, chloride (9CI) (CA INDEX NAME)



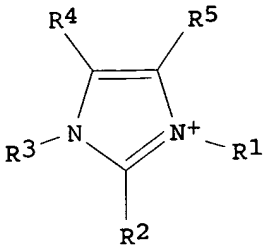
● Cl⁻

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 34 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:675770 HCAPLUS
DN 139:216906
TI Electrochemical apparatus
IN Fuchigami, Kazuo; Atobe, Masato; Ishii, Hideki; Sekiguchi, Kei; Takada, Naokado
PA Central Glass Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003243028	A2	20030829	JP 2002-36172	20020214 <--
PRAI JP 2002-36172		20020214 <--		

GI



I

AB The apparatus, e.g., batteries, double layer capacitors, electrochromic display devices, has an ion conductor between a cathode and an anode; where conducting polymers are used for either or both electrodes are, and an ionic liquid is used for the ion conductor. The conducting polymer is selected from polypyrrole, polythiophene, and their derivs.; and the ionic liquid contains anions of formula: [CxF2x+1SO3]-, [N(SO2CxF2x+1)(SO2CyF2y+1)]-, [C(SO2CxF2x+1)(SO2CyF2y+1)(SO2CzF2z+1)]- (x, y, and z = an integer of 1-8) and cations I (R1-5 = H or C1-20 alkyl groups).

IC ICM H01M010-40
ICS H01G009-058; H01M004-02; H01M004-60

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76

ST conducting polymer electrode electrochem app; fluorocarbon sulfonic acid deriv electrolyte electrochem app

IT Capacitors
(double layer; lithium fluorocarbonsulfonate electrolyte and conducting polymer electrodes for electrochem. devices)

IT Electric apparatus
(electrochem.; lithium fluorocarbonsulfonate electrolyte and conducting polymer electrodes for electrochem. devices)

IT Electrochromic imaging devices
Secondary batteries
(lithium fluorocarbonsulfonate electrolyte and conducting polymer electrodes for electrochem. devices)

IT 25233-34-5, Polythiophene 30604-81-0, Polypyrrole **145022-44-2** 268536-05-6
RL: **DEV (Device component use)**; USES (Uses)
(lithium fluorocarbonsulfonate electrolyte and conducting polymer **electrodes** for electrochem. devices)

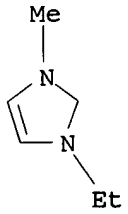
IT **145022-44-2**
RL: **DEV (Device component use)**; USES (Uses)
(lithium fluorocarbonsulfonate electrolyte and conducting polymer **electrodes** for electrochem. devices)

RN 145022-44-2 HCAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

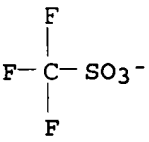
CRN 65039-03-4
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 37181-39-8
CMF C F3 O3 S



L53 ANSWER 35 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:417542 HCAPLUS
DN 139:9292
TI Lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy
IN Martinet, Sebastien; Le Cras, Frederic
PA Commissariat a l'Energie Atomique, Fr.
SO Fr. Demande, 30 pp.
CODEN: FRXXBL
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2832859	A1	20030530	FR 2001-15377	20011128 <--
	FR 2832859	B1	20040109		
	WO 2003047021	A2	20030605	WO 2002-FR4066	20021127 <--
	WO 2003047021	A3	20040930		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002365474	A1	20030610	AU 2002-365474	20021127 <--
	EP 1493202	A2	20050105	EP 2002-803836	20021127 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	CN 1596483	A	20050316	CN 2002-823538	20021127 <--
	JP 2005539347	T2	20051222	JP 2003-548334	20021127 <--

US 2005069768 A1 20050331 US 2004-495733 20040514 <--
PRAI FR 2001-15377 A 20011128 <--
WO 2002-FR4066 W 20021127 <--

AB A lithium electrochem. generator (i.e., battery) contains two peripheral electrodes (one pos. and one neg.) that contact active material beds, each of which, in turn, contacts a separator. Between the two separators is at least one bipolar electrode sandwiched between active neg. and active pos. bed materials. The elec. conducting substrates are aluminum or an aluminum alloy. A suitable neg. active material is Li4Ti5O12; suitable pos. active materials are transition metal phosphates, orthosilicates, and oxides, as well as carbon or non-metal salts (especially phosphates such as Li(Fe,Mn)PO4 or LiCoPO4 and oxides such as LiAlxNi1-xO2 (x = 0-0.25)). The separators can also contain an ionic liquid (i.e., imidazolium, dialkylimidazolium, alkylpyridinium, and dialkylpyridinium chloroaluminate and alkylchloroaluminate salts) that includes a dissolved lithium salt.

IC ICM H01M010-38
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST lithium battery bipolar electrode; aluminum alloy lithium battery bipolar electrode

IT Pyridinium compounds
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(battery electrolytes containing; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT Battery electrodes
(bipolar; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT Ionic liquids
(electrolytes; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT Onium compounds
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(imidazolium compds., battery electrolytes containing; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT Battery electrolytes
(ionic liqs.; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

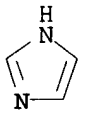
IT Secondary battery separators
(lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT Aluminum alloy, base
RL: DEV (Device component use); USES (Uses)
(elec. conducting substrates; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT 110-86-1D, Pyridine, alkyl derivs., salts **288-32-4D**, 1H-Imidazole, alkyl derivs., salts
RL: **DEV (Device component use)**; NUU (Other use, unclassified); USES (Uses)
(battery electrolytes containing; lithium battery comprising at least a bipolar **electrode** with conducting substrates of aluminum or aluminum alloy)

IT 13824-63-0, Cobalt lithium phosphate (CoLiPO4) 19414-36-9, Iron lithium manganese phosphate ((Fe,Mn)Li(PO4)) 532934-10-4, Aluminum lithium nickel oxide (Al0-0.25LiNi0.75-1O2)
RL: DEV (Device component use); USES (Uses)
(bipolar electrode; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(elec. conducting substrates; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)
IT 532934-12-6, Lithium nitride oxide phosphide (Li3N0.3O2.5P)
RL: DEV (Device component use); USES (Uses)
(lithium cation conductor; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)
IT 12031-95-7, Lithium titanium oxide (Li4Ti5O12)
RL: DEV (Device component use); USES (Uses)
(neg. active material; lithium battery comprising at least a bipolar electrode with conducting substrates of aluminum or aluminum alloy)
IT **288-32-4D**, 1H-Imidazole, alkyl derivs., salts
RL: **DEV (Device component use)**; NUU (Other use, unclassified); USES (Uses)
(battery electrolytes containing; lithium battery comprising at least a bipolar **electrode** with conducting substrates of aluminum or aluminum alloy)
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 36 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:962387 HCAPLUS
DN 138:58892
TI Photoelectrochemical cell
IN Horiuchi, Tamotsu; Hirota, Nobuaki
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002367685	A2	20021220	JP 2001-175875	20010611 <--
PRAI	JP 2001-175875		20010611 <--		

OS MARPAT 138:58892
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The photoelectrochem cell uses a compound selected from I-IV [A1 = (substituted) aryl or heterocyclic group, n = 0 or 1 the C:C may be of cis or trans form, A2 and A3 = (substituted) alkyl, aralkyl, aryl, or heterocyclic groups, A4 = OH, (substituted) alkoxy, aryloxy, aryl, or

amino groups, and Cp1 and Cp2 = coupler groups] as photoelec converting material.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell bisazo fluorene dye

IT Photoelectrochemical cells
(structure of bisazo fluorene dyes for sensitizing titania electrodes in photoelectrochem. cells)

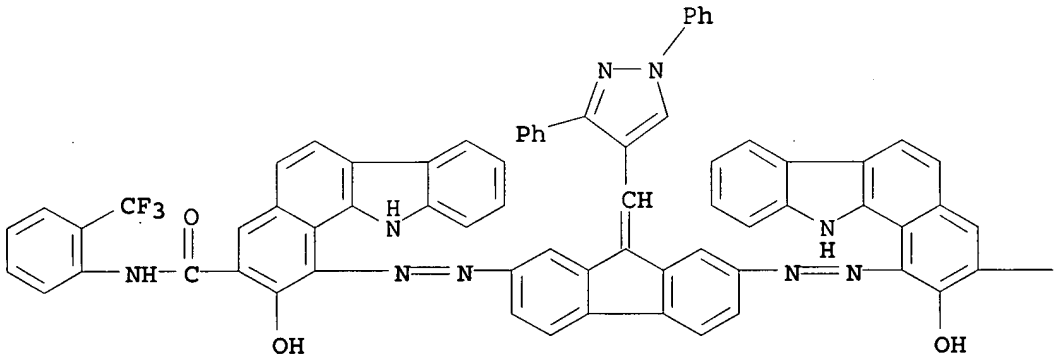
IT 13463-67-7, Titania, uses 479229-18-0 479229-20-4 479229-22-6 479229-24-8 **479229-28-2** 479229-30-6 479229-32-8 479229-35-1 479229-37-3 479229-39-5 479229-41-9 **479243-94-2**
RL: **DEV (Device component use)**; USES (Uses)
(structure of bisazo fluorene dyes for sensitizing titania **electrodes** in photoelectrochem. cells)

IT **479229-28-2 479243-94-2**
RL: **DEV (Device component use)**; USES (Uses)
(structure of bisazo fluorene dyes for sensitizing titania **electrodes** in photoelectrochem. cells)

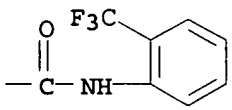
RN 479229-28-2 HCAPLUS

CN 11H-Benzo[a]carbazole-3-carboxamide, 1,1'-[[9-[(1,3-diphenyl-1H-pyrazol-4-yl)methylene]-9H-fluorene-2,7-diyl]bis(azo)]bis[2-hydroxy-N-[2-(trifluoromethyl)phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A

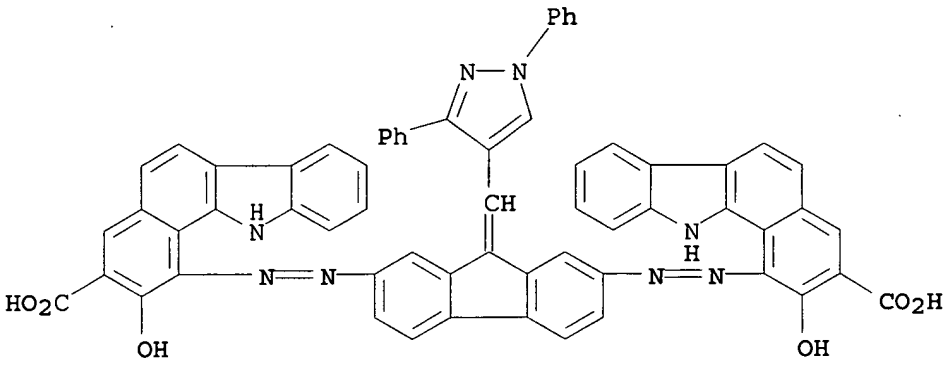


PAGE 1-B



RN 479243-94-2 HCAPLUS

CN 11H-Benzo[a]carbazole-3-carboxylic acid, 1,1'-[[9-[(1,3-diphenyl-1H-pyrazol-4-yl)methylene]-9H-fluorene-2,7-diyl]bis(azo)]bis[2-hydroxy- (9CI) (CA INDEX NAME)



L53 ANSWER 37 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:925567 HCAPLUS
DN 138:15266
TI Photoelectrochemical cell
IN Horiuchi, Yasushi; Hirota, Nobuaki
PA Mitsubishi Paper Mills, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002352871	A2	20021206	JP 2001-161942	20010530 <--
PRAI	JP 2001-161942		20010530 <--		

OS MARPAT 138:15266
GI

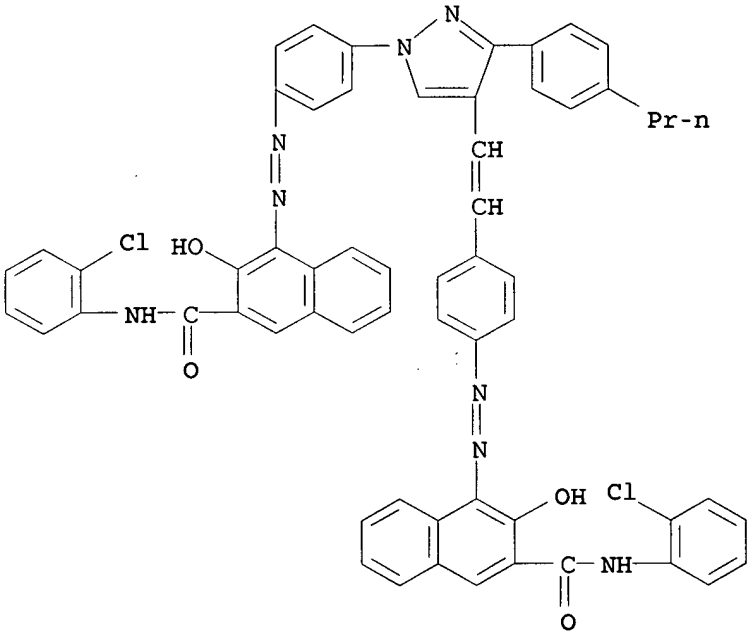
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The photoelectrochem. cell uses pyrazol structure containing bis-azo dyes I-IV, where A1-4 = (substituted) alkyl, aralkyl, aryl, or heterocyclic groups; n1-n4 = 0, 1, or 2; m1-m4 = 0, 1, or 2; the C:C double bond may have a cis or trans configuration, and Cp1 and Cp2 are coupler groups.
IC ICM H01M014-00
ICS C07D231-12; C07D401-04; C07D401-06; C07D401-14; C07D409-06; H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell pyrazol azo dye
IT Photoelectrochemical cells
(pyrazol structure containing bis-azo dye sensitized semiconductor electrodes for photoelectrochem. cells)
IT 13463-67-7, Titania, uses **190142-52-0 477700-16-6 477700-17-7 477700-18-8 477700-19-9 477700-20-2 477700-21-3 477700-22-4**

477700-23-5 477700-24-6 477700-25-7
477700-26-8
RL: **DEV (Device component use)**; USES (Uses)
(pyrazol structure containing bis-azo dye sensitized semiconductor **electrodes** for photoelectrochem. cells)

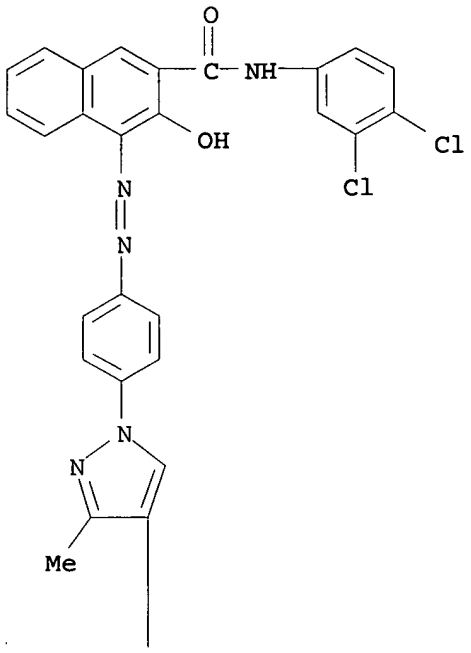
IT **190142-52-0 477700-16-6 477700-17-7**
477700-18-8 477700-19-9 477700-20-2
477700-21-3 477700-22-4 477700-23-5
477700-24-6 477700-25-7 477700-26-8
RL: **DEV (Device component use)**; USES (Uses)
(pyrazol structure containing bis-azo dye sensitized semiconductor **electrodes** for photoelectrochem. cells)

RN 190142-52-0 HCAPLUS
CN 2-Naphthalenecarboxamide, N-(2-chlorophenyl)-4-[[4-[4-[2-[4-[[3-[[(2-chlorophenyl)amino]carbonyl]-2-hydroxy-1-naphthalenyl]azo]phenyl]ethenyl]-3-(4-propylphenyl)-1H-pyrazol-1-yl]phenyl]azo]-3-hydroxy- (9CI) (CA INDEX NAME)

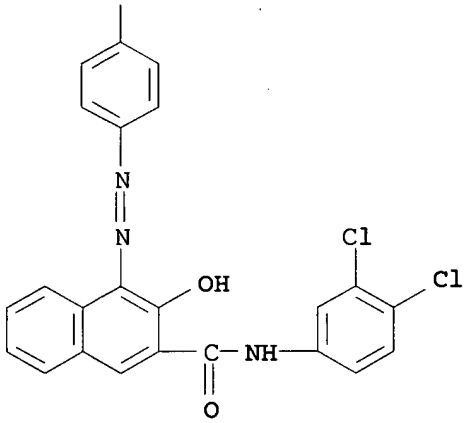


RN 477700-16-6 HCAPLUS
CN 2-Naphthalenecarboxamide, 4,4'-[(3-methyl-1H-pyrazole-1,4-diyl)bis(4,1-phenyleneazo)]bis[N-(3,4-dichlorophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

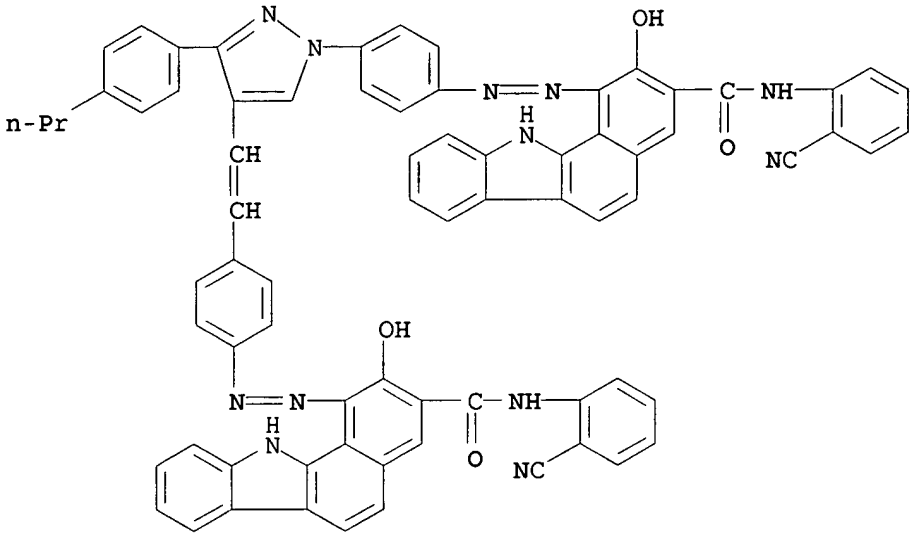
PAGE 1-A



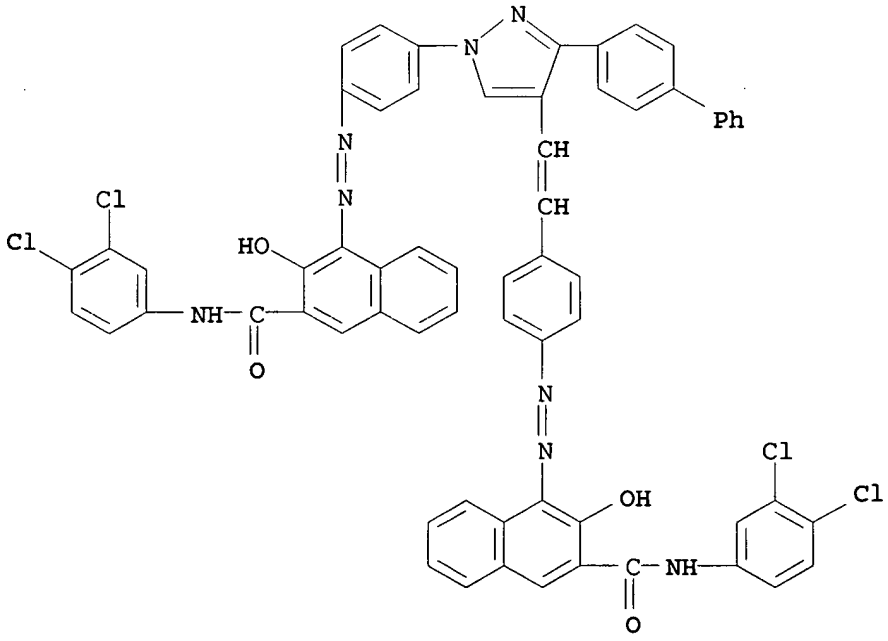
PAGE 2-A



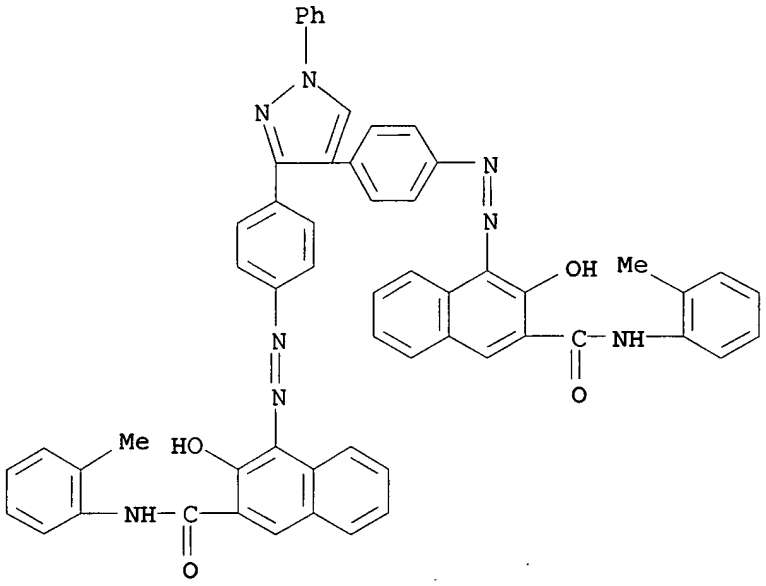
RN 477700-17-7 HCAPLUS
CN 11H-Benzo[a]carbazole-3-carboxamide, N-(2-cyanophenyl)-1-[[4-[4-[2-[4-[[3-[[(2-cyanophenyl)amino]carbonyl]-2-hydroxy-11H-benzo[a]carbazol-1-yl]azo]phenyl]ethenyl]-3-(4-propylphenyl)-1H-pyrazol-1-yl]phenyl]azo]-2-hydroxy- (9CI) (CA INDEX NAME)



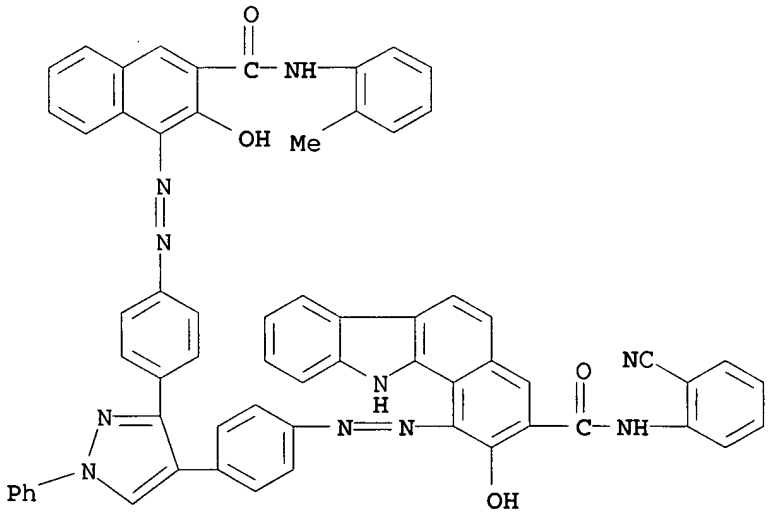
RN 477700-18-8 HCAPLUS
CN 2-Naphthalenecarboxamide, 4-[[4-[3-[1,1'-biphenyl]-4-yl-4-[2-[4-[[3-[[(3,4-dichlorophenyl)amino]carbonyl]-2-hydroxy-1-naphthalenyl]azo]phenyl]ethenyl]-1H-pyrazol-1-yl]phenyl]azo]-N-(3,4-dichlorophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)



RN 477700-19-9 HCAPLUS
CN 2-Naphthalenecarboxamide, 4,4'-[(1-phenyl-1H-pyrazole-3,4-diyl)bis(4,1-phenyleneazo)]bis[3-hydroxy-N-(2-methylphenyl)- (9CI) (CA INDEX NAME)

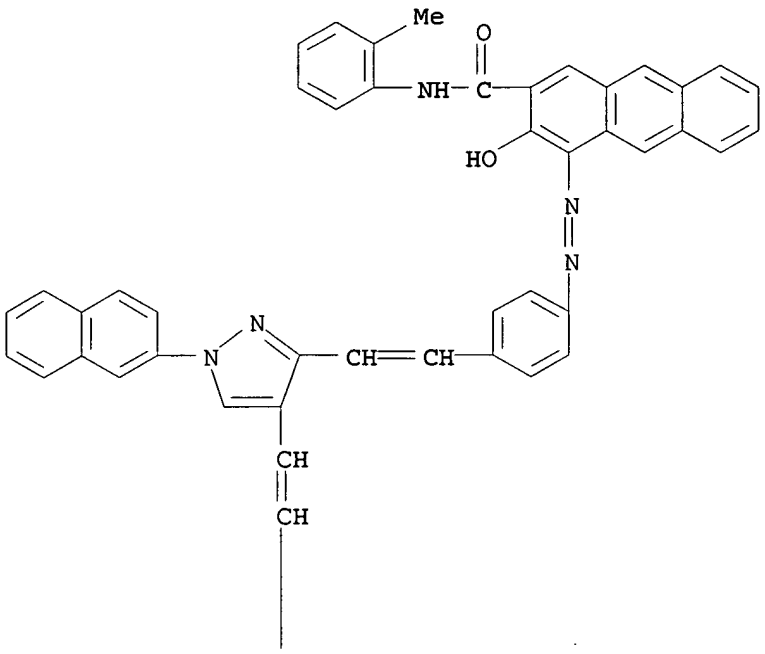


RN 477700-20-2 HCAPLUS
CN 11H-Benzo[a]carbazole-3-carboxamide, N-(2-cyanophenyl)-2-hydroxy-1-[[4-[3-[4-[[2-hydroxy-3-[[(2-methylphenyl)amino]carbonyl]-1-naphthalenyl]azo]phenyl]-1-phenyl-1H-pyrazol-4-yl]phenyl]azo]- (9CI) (CA INDEX NAME)

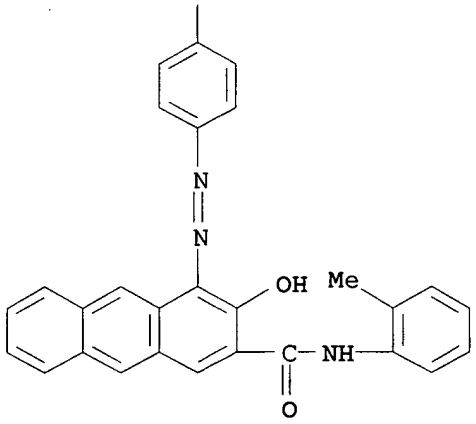


RN 477700-21-3 HCAPLUS
CN 2-Anthracenecarboxamide, 4,4'-[[1-(2-naphthalenyl)-1H-pyrazole-3,4-diyl]bis(2,1-ethenediyl-4,1-phenyleneazo)]bis[3-hydroxy-N-(2-methylphenyl)- (9CI) (CA INDEX NAME)

PAGE 1-A

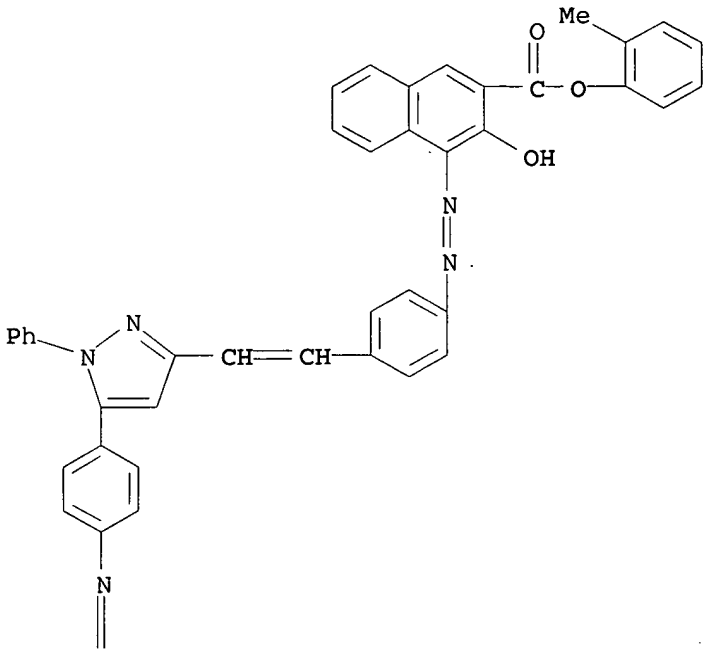


PAGE 2-A

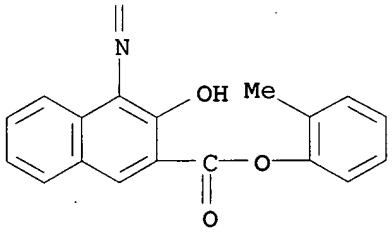


RN 477700-22-4 HCAPLUS
CN 2-Naphthalenecarboxylic acid, 3-hydroxy-4-[[4-[3-[2-[4-[[2-hydroxy-3-[(2-methylphenoxy)carbonyl]-1-naphthalenyl]azo]phenyl]ethenyl]-1-phenyl-1H-pyrazol-5-yl]phenyl]azo]-, 2-methylphenyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

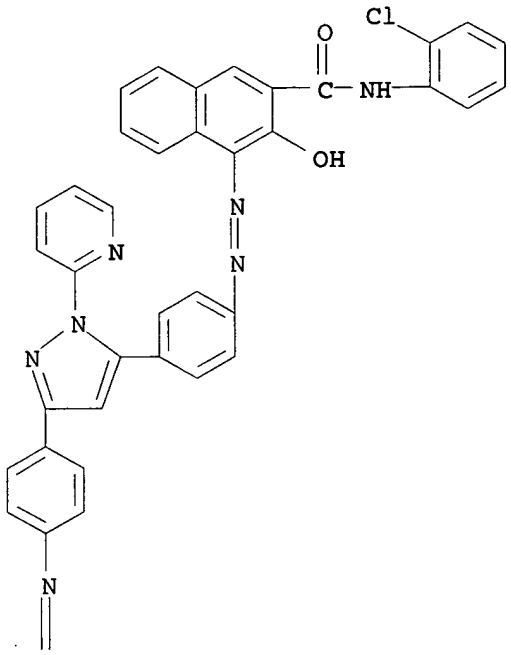


PAGE 2-A

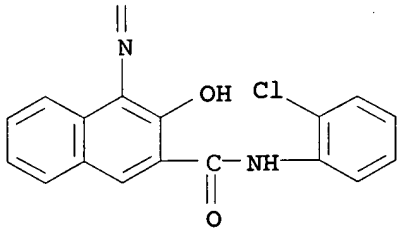


RN 477700-23-5 HCAPLUS
CN 2-Naphthalenecarboxamide, 4,4'-[[1-(2-pyridinyl)-1H-pyrazole-3,5-diyl]bis(4,1-phenyleneazo)]bis[N-(2-chlorophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A

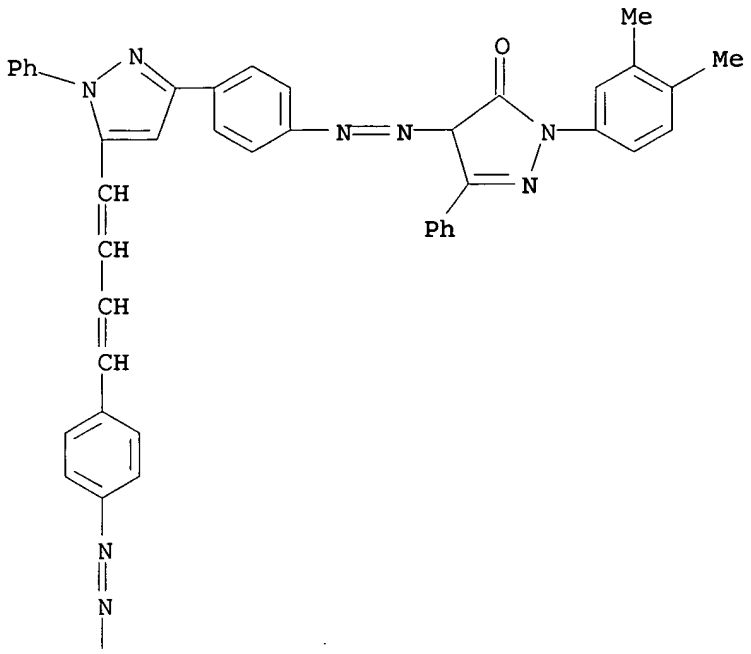


PAGE 2-A

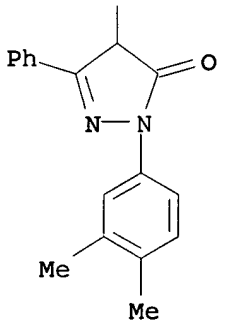


RN 477700-24-6 HCAPLUS
CN 3H-Pyrazol-3-one, 2-(3,4-dimethylphenyl)-4-[[4-[5-[4-[4-[[1-(3,4-dimethylphenyl)-4,5-dihydro-5-oxo-3-phenyl-1H-pyrazol-4-yl]azo]phenyl]-1,3-butadienyl]-1-phenyl-1H-pyrazol-3-yl]phenyl]azo]-2,4-dihydro-5-phenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

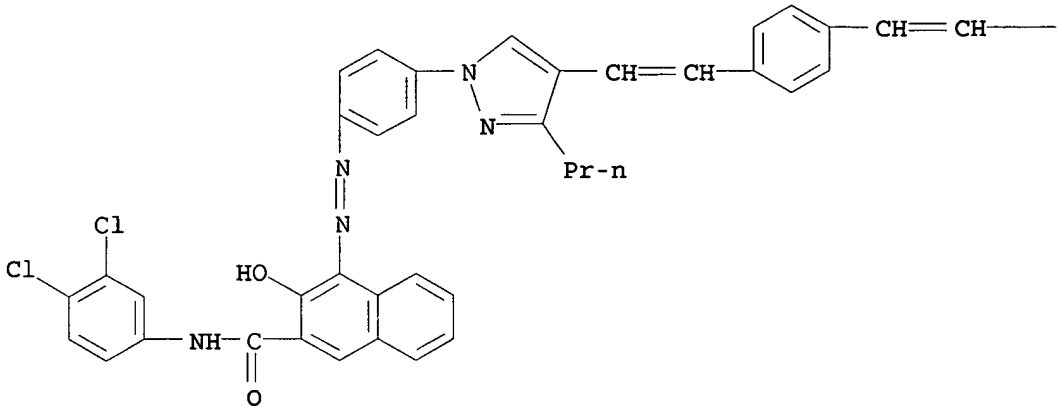


PAGE 2-A

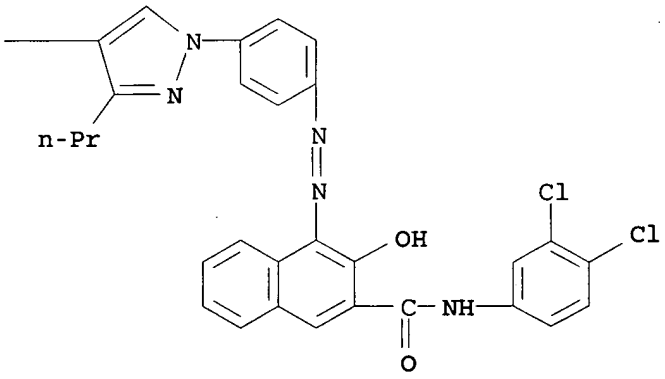


RN 477700-25-7 HCAPLUS
CN 2-Naphthalenecarboxamide, 4,4'-[1,4-phenylenebis[2,1-ethenediyl(3-propyl-1H-pyrazole-4,1-diyl)-4,1-phenyleneazo]]bis[N-(3,4-dichlorophenyl)-3-hydroxy- (9CI) (CA INDEX NAME)

PAGE 1-A

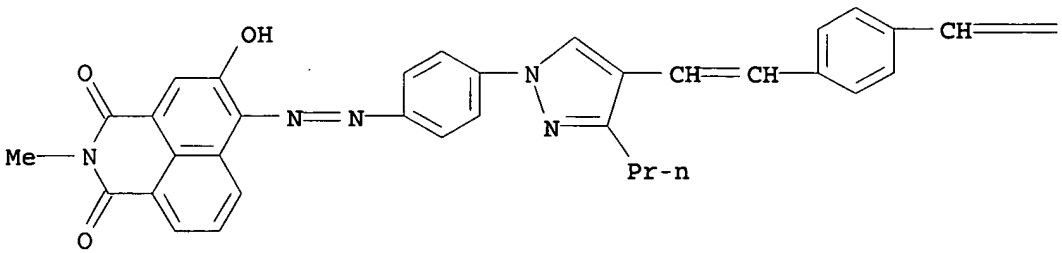


PAGE 1-B

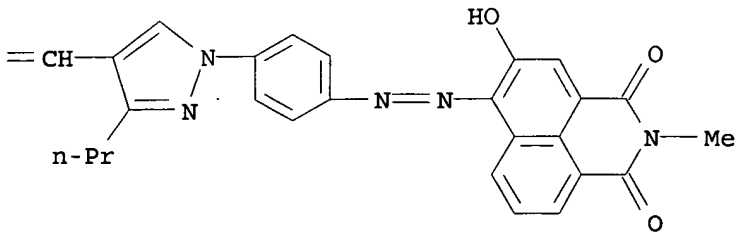


RN 477700-26-8 HCAPLUS
CN 1H-Benz[de]isoquinoline-1,3(2H)-dione, 6,6'-[1,4-phenylenebis[2,1-ethenediyl(3-propyl-1H-pyrazole-4,1-diyl)-4,1-phenyleneazo]]bis[5-hydroxy-2-methyl- (9CI) (CA INDEX NAME)

PAGE 1-A



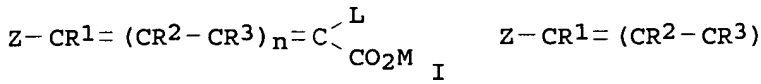
PAGE 1-B



L53 ANSWER 38 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:429280 HCAPLUS
DN 137:22363
TI Organic dye sensitized thin film semiconductor electrode and photoelectrochemical cell
IN Hara, Kohjirou; Sayama, Kazuhiro; Arakawa, Hironori; Suga, Sadaharu; Shinpo, Akira; Ooga, Yasuyo; Kusano, Hajime
PA National Institute of Advanced Industrial Science and Technology, Japan
SO PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

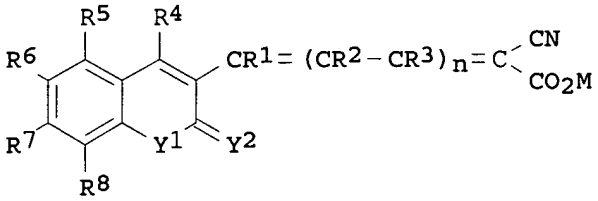
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002045199	A1	20020606	WO 2001-JP10404	20011128 <--
	W: US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	JP 2002164089	A2	20020607	JP 2000-361549	20001128 <--
	EP 1339129	A1	20030827	EP 2001-999017	20011128 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	US 2004099306	A1	20040527	US 2003-415552	20030501 <--
PRAI	JP 2000-361549	A	20001128 <--		
	WO 2001-JP10404	W	20011128 <--		

OS MARPAT 137:22363
GI

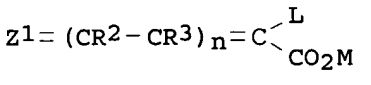


I

II

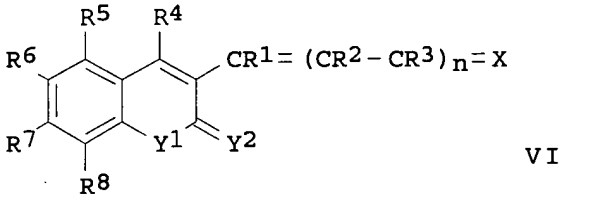


III



IV

V



VI

AB The electrode is a thin film semiconductor sensitized with an organic dye I, where Z = (substituted) heterocyclic group, L = electron attracting group, R1-R3 = H or substituents and any 2 neighboring R may join to form a ring, M = H or salt forming cation, n = 0-3 integer; or IV, where Z1 = bivalent heterocyclic group. The pigment is selected from II, III (Y1 and Y2 = hetero atoms), V, VI (X = heterocyclic group containing ≥2 hetero atoms and an anionic group or a substituent having an anionic group), and VII (R1-5 = H or substituents, R9-11 = H or C1-6 alkyl groups, neighboring R1-3 may join to form a ring).

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell semiconductor electrolyte sensitizing org dye

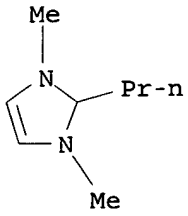
IT Photoelectrochemical cells
(organic dyes for sensitizing semiconductor electrodes in photoelectrochem. cells)

IT 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide **86173-31-1**
RL: **DEV (Device component use)**; USES (Uses)
(electrolyte solns. for photoelectrochem. cells with organic dye sensitized thin film semiconductor **electrodes**)

IT 339317-15-6 339317-17-8 405111-60-6 405111-61-7 405111-64-0 405111-66-2 405111-71-9 405111-72-0
RL: MOA (Modifier or additive use); USES (Uses)
(organic dyes for sensitizing thin film semiconductor electrodes in photoelectrochem. cells)

IT 13463-67-7, Titania, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(organic dyes for sensitizing thin film titania semiconductor electrodes in photoelectrochem. cells)

IT **86173-31-1**
RL: **DEV (Device component use)**; USES (Uses)
(electrolyte solns. for photoelectrochem. cells with organic dye sensitized thin film semiconductor **electrodes**)
RN 86173-31-1 HCAPLUS
CN 1H-Imidazolium, 1,3-dimethyl-2-propyl-, iodide (9CI) (CA INDEX NAME)



● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 39 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:273068 HCAPLUS
DN 136:312546
TI Photoelectrochemical cell using aqueous electrolyte
IN Inoue, Teruhisa; Ikeda, Masaaki; Shigaki, Koichiro
PA Nippon Kayaku Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

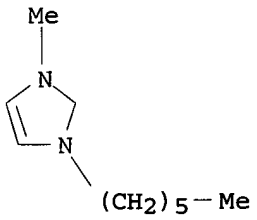
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002110262	A2	20020412	JP 2000-303259	20001003 <--
PRAI JP 2000-303259		20001003 <--		

AB The photoelectrochem. cell uses a water containing electrolyte soln, preferably containing a redox couple electrolyte, containing a halogen and its halide compound
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST aq redox couple electrolyte photoelectrochem cell
IT Photoelectrochemical cells
(semiconductor electrodes for photoelectrochem. cell using water containing redox couple electrolyte)
IT Electrolytes
(water containing redox couple electrolytes for semiconductor electrodes for photoelectrochem. cell)
IT 141460-19-7
RL: MOA (Modifier or additive use); USES (Uses)
(dye sensitized semiconductor electrodes for photoelectrochem. cell using water containing redox couple electrolyte)
IT 96-49-1, Ethylene carbonate 631-40-3, Tetra-propylammonium iodide

947-19-3, 1-Hydroxy-cyclohexyl phenyl ketone 7553-56-2, Iodine, uses
7681-11-0, Potassium iodide, uses 7732-18-5, Water, uses 13463-67-7,
Titania, uses 26570-48-9, Polyethylene glycol diacrylate 34624-61-8
178631-05-5
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** for photoelectrochem. cell using
water containing redox couple electrolyte)

IT **178631-05-5**
RL: **DEV (Device component use)**; USES (Uses)
(semiconductor **electrodes** for photoelectrochem. cell using
water containing redox couple electrolyte)

RN 178631-05-5 HCAPLUS
CN 1H-Imidazolium, 1-hexyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



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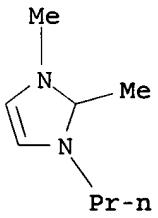
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 40 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:238110 HCAPLUS
DN 136:265799
TI Photoelectric converter, its manufacture, and photoelectrochemical cell
IN Okura, Akira; Den, Toru
PA Canon Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002093471	A2	20020329	JP 2000-275337	20000911 <--
PRAI JP 2000-275337		20000911 <--		

AB The photoelec. converter has a means generating elec. charges when illuminated, and an electrodeposited acicular semiconductor crystal layer on the charge generating means, conducting the charges towards an electrode. The converter is prepared by forming an electrode on a substrate, electrodepositing a charge conducting acicular semiconductor crystal layer on the electrode, and forming a charge generating means on the crystal layer. The photoelectrochem. cell has the photoelec. converter held between front side and backside covers within a frame.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell photoelec converter structure; photoelec converter acicular semiconductor crystal charge conductor; electrodeposition

acicular semiconductor conductor photoelec converter
IT Photoelectrochemical cells
(photoelectrochem. cells containing acicular semiconductor crystal charge conducting layers from nanoporous aluminum layer by electrodeposition)
IT 631-40-3P, Tetrapropylammonium iodide 7553-56-2P, Iodine, uses 10377-51-2P, Lithium iodide **218151-78-1P**
RL: **DEV (Device component use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(electrolytes in photoelectrochem. cells containing **electrodeposited** acicular semiconductor crystal charge conducting layers)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(photoelectrochem. cells containing acicular semiconductor crystal charge conducting layers from nanoporous aluminum layer by electrodeposition)
IT 1317-70-0P, Anatase
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(photoelectrochem. cells containing fine anatase crystals on electrodeposited acicular semiconductor crystal charge conducting layers)
IT 141460-19-7
RL: DEV (Device component use); USES (Uses)
(structure and manufacture of photoelectrochem. cells containing electrodeposited acicular semiconductor crystal charge conducting layers)
IT 1314-13-2P, Zinc oxide, uses
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(structure and manufacture of photoelectrochem. cells containing electrodeposited acicular semiconductor crystal charge conducting layers)
IT **218151-78-1P**
RL: **DEV (Device component use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(electrolytes in photoelectrochem. cells containing **electrodeposited** acicular semiconductor crystal charge conducting layers)
RN 218151-78-1 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



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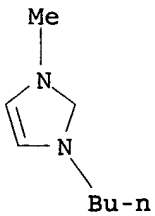
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 41 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:657699 HCAPLUS

DN 135:229351
TI Photoelectric converters and photoelectrochemical cells
IN Nakamura, Shigeru
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001243995	A2	20010907	JP 2000-54547	20000229 <--
PRAI JP 2000-54547		20000229 <--		

AB The photoelec. converters have a semiconductor layer containing an adsorbed pigment on a conductive support, a charge transfer layer containing a charge transfer material, a counter electrode, and a charge transfer material retaining porous layer on the backside of the counter electrode.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell electrode charge transfer layer
IT Photoelectrochemical cells
(charge transfer material retaining porous layers on backside of counter electrodes in photoelectrochem. cells)
IT 7553-56-2, Iodine, uses **65039-05-6 143314-16-3**
RL: **DEV (Device component use)**; USES (Uses)
(charge transfer material in porous retaining layers on backside of counter **electrodes** in photoelectrochem. cells)
IT 7631-86-9, Silica, uses 50926-11-9, Ito
RL: DEV (Device component use); USES (Uses)
(charge transfer material retaining porous layers on backside of counter electrodes in photoelectrochem. cells)
IT 7440-06-4, Platinum, uses
RL: DEV (Device component use); USES (Uses)
(platinum counter electrodes containing porous backside charge transfer material retaining layers in photoelectrochem. cells)
IT **65039-05-6 143314-16-3**
RL: **DEV (Device component use)**; USES (Uses)
(charge transfer material in porous retaining layers on backside of counter **electrodes** in photoelectrochem. cells)
RN 65039-05-6 HCAPLUS
CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



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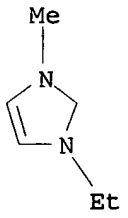
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 143314-16-3 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

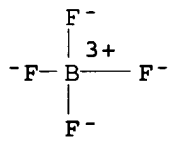
CRN 65039-03-4
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

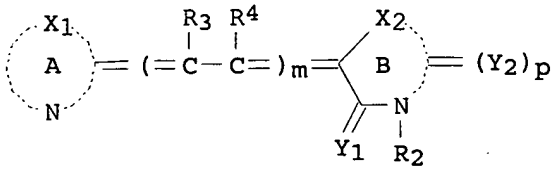
CRN 14874-70-5
CMF B F4
CCI CCS



L53 ANSWER 42 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:134028 HCAPLUS
DN 134:195721
TI Organic pigment sensitized porous oxide semiconductor electrodes and photoelectrochemical cells using the electrodes
IN Sayama, Kazuhiro; Arakawa, Hironori; Sugihara, Hideki; Suga, Sadaji; Satsuki, Makoto; Mori, Nahoko
PA Agency of Industrial Sciences and Technology, Japan; Hayashibara Biochemical Laboratories, Inc.
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001052766	A2	20010223	JP 2000-69561	20000313 <--
	JP 3680094	B2	20050810		
PRAI	JP 1999-155334	A	19990602 <--		

OS MARPAT 134:195721
GI



I

AB The electrodes have an organic pigment I [rings A and B = (substituted) N-containing 5- or 6-membered rings; X1 and X2 = C or hetero atoms; Y1 and Y2 = O or S; 1 of R1 and R2 is anchoring group and the other is a (substituted) C≥16 alkyl group; R3 and R4 = H, halogen, or substituents having C or hetero atoms as the connecting atom, and may join together to from a ring; m = 0, 1, or 2; p = 0 or 1] adsorbed on a porous oxide semiconductor. The semiconductor is preferably TiO2. The photoelectrochem. cells have a redox electrolyte, preferably containing imidazolium salts and pyridine type compds., between the semiconductor electrode and a counter electrode.

IC ICM H01M014-00
ICS H01L031-04

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell semiconductor electrode sensitizing pigment; imidazolium salt pyridine photoelectrochem cell electrolyte

IT Semiconductor devices
(electrodes; organic pigment for sensitizing porous oxide semiconductor electrodes for photoelectrochem. cells)

IT Photoelectrochemical cells
(photoelectrochem. cells with organic pigment sensitized porous oxide semiconductor electrodes and redox electrolytes)

IT Electrodes
(semiconductive; organic pigment for sensitizing porous oxide semiconductor electrodes for photoelectrochem. cells)

IT 7553-56-2, Iodine, uses 10377-51-2, Lithium iodide **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of redox electrolytes for photoelectrochem. cells with organic pigment sensitized porous oxide semiconductor **electrodes**)

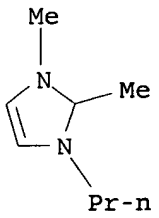
IT 13463-67-7, Titania, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(organic pigment for sensitizing porous oxide semiconductor electrodes for photoelectrochem. cells)

IT 75983-37-8
RL: MOA (Modifier or additive use); USES (Uses)
(organic pigment for sensitizing porous oxide semiconductor electrodes for photoelectrochem. cells)

IT **218151-78-1**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of redox electrolytes for photoelectrochem. cells with organic pigment sensitized porous oxide semiconductor **electrodes**)

RN 218151-78-1 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, iodide (9CI) (CA INDEX NAME)



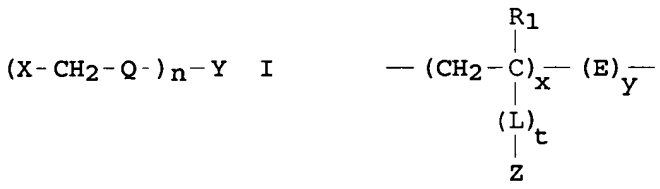
● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 43 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:98808 HCAPLUS
DN 134:134126
TI Electrolyte compositions, photoelectric converters, and photoelectrochemical cells
IN Wariishi, Koji
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 48 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001035550	A2	20010209	JP 1999-205429	19990719 <--
PRAI JP 1999-205429		19990719 <--		

GI



I II

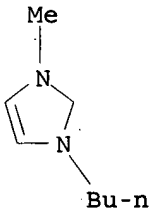
AB The electrolytes contain a crosslinked copolymer formed by reacting I (X = eliminating group, q = arylene group or a divalent connection group containing heteroatoms, Y = an s-valent joining group, and n = 2-4 integer) with a N containing polymer. The N containing polymer is preferably II, where R1 = H or alkyl group, L = bivalent connection group, Z = N containing heterocyclic ring, E = repeating unit of a compound having ethylenic unsatd. group, t = 0 or 1, x =5-100%, and y = 0-95%. The photoelectrochem. cells, have a conductive layer, a light sensitive layer, a charge transferring layer containing the electrolyte, and a counter electrode.
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell crosslinked polymer electrolyte

IT Electrolytes
Photoelectrochemical cells
(compns. of crosslinked polymer electrolytes for photoelectrochem. cells containing pigment sensitized titania electrodes)

IT 75-05-8, Acetonitrile, uses 108-32-7, Propylene carbonate 631-40-3, Tetrapropylammonium iodide 4960-81-0 7553-56-2, Iodine, uses 13463-67-7, Titania, uses 14354-67-7 19836-78-3, 3-Methyl-2-oxazolidinone 31442-68-9 53761-76-5 **65039-05-6** 80530-93-4 82687-39-6, Poly(1-methyl-1H-pyrrole-2,5-diyl) 90783-55-4 110911-60-9 141460-19-7 **178631-05-5** 309242-66-8 309242-68-0 321858-74-6 321858-75-7 321858-76-8 321858-81-5 321858-84-8 321858-85-9 321858-87-1 321858-89-3 321858-95-1 321858-99-5 321859-02-3 321859-05-6
RL: **DEV (Device component use)**; USES (Uses)
(compns. of crosslinked polymer electrolytes for photoelectrochem. cells containing pigment sensitized titania **electrodes**)

IT **65039-05-6 178631-05-5**
RL: **DEV (Device component use)**; USES (Uses)
(compns. of crosslinked polymer electrolytes for photoelectrochem. cells containing pigment sensitized titania **electrodes**)

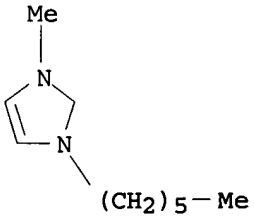
RN 65039-05-6 HCAPLUS
CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

RN 178631-05-5 HCAPLUS
CN 1H-Imidazolium, 1-hexyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



● I^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

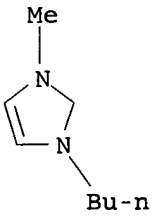
L53 ANSWER 44 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:741257 HCAPLUS
DN 133:323971
TI Photoelectric converters and photoelectrochemical cells
IN Nakamura, Shigeru
PA Fuji Photo Film Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 34 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000294306	A2	20001020	JP 1999-98707	19990406 <--
	US 6291763	B1	20010918	US 2000-543339	20000405 <--
PRAI	JP 1999-98707	A	19990406 <--		
	JP 1999-280203	A	19990930 <--		

AB The photoelec. converters have a layer of semiconductor particles containing adsorbed pigment on a conductive support, a charge transferring layer, and a counter electrode, where a spacer layer containing insulator particles is placed between the semiconductor particle layer and the counter electrode. The insulator particles are amorphous oxides of Si, Al, and/or B; and the pigment is a metal complex or a polymethine pigment.

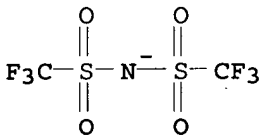
IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell photoelec converter insulator spacer
IT Photoelectrochemical cells
(photoelectrochem. cells containing insulator particle spacer between pigment sensitized semiconductor and counter electrode)
IT **65039-05-6 174899-83-3**
RL: **DEV (Device component use)**; USES (Uses)
(electrolytes for photoelectrochem. cells containing insulator particle spacer between pigment sensitized semiconductor and counter **electrode**)
IT 1303-86-2, Boron oxide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(insulator particle spacer between pigment sensitized semiconductor and counter electrode in photoelectrochem. cells)
IT 13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(photoelectrochem. cells containing insulator particle spacer between pigment sensitized semiconductor and counter electrode)
IT 207347-46-4 303158-69-2 303161-93-5 303161-95-7
RL: MOA (Modifier or additive use); USES (Uses)
(photoelectrochem. cells containing insulator particle spacer between pigment sensitized semiconductor and counter electrode)
IT **65039-05-6 174899-83-3**
RL: **DEV (Device component use)**; USES (Uses)
(electrolytes for photoelectrochem. cells containing insulator particle spacer between pigment sensitized semiconductor and counter **electrode**)
RN 65039-05-6 HCAPLUS
CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RN 174899-83-3 HCAPLUS
CN 1H-Imidazolium, 1-butyl-3-methyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)

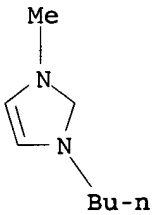
CM 1

CRN 98837-98-0
CMF C2 F6 N O4 S2



CM 2

CRN 80432-08-2
CMF C8 H15 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 45 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:298108 HCAPLUS
DN 132:323876
TI Electrochemical studies of metal dichalcogenide-polymer composite electrodes in 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate and 1-ethyl-3-methyl-imidazolium tetrafluoroborate
AU Sutto, Thomas E.; Trulove, Paul C.; De Long, Hugh C.
CS Code 6170, Chemistry Division, NRL, Washington, DC, 20375, USA

SO Proceedings - Electrochemical Society (2000), 99-41(Molten Salts XII), 43-53
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English

AB A comparative electrochem. study of DMPIBF4 and EMIBF4 using layered metal sulfide- PVdF-HFP polymer composite electrodes was undertaken to investigate their use in place of graphite in the DIME (dual intercalating molten electrolyte) battery system. TiS2 and TaS2 were chosen since both are known to readily intercalate large heterocyclic compds. MoS2 was chosen since it is similar in many ways to the other metal sulfides, but it does not lend itself to the intercalation of large guest species. Results indicate that MoS2 was too difficult to electrochem. intercalate, and exhibited no charge/discharge behavior. TaS2, on the other hand, underwent spontaneous intercalation, and subsequent exfoliation, resulting in low efficiencies. TiS2 exhibited a high efficiency for both cation (80%) and, remarkably, anion (65%) intercalation. Time delayed discharging indicated that the BF4- anion does suffer from chemical degradation within the sulfide layers over time, unlike that observed for BF4- in graphite.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
ST battery electrode metal dichalcogenide polymer composite; imidazolium tetrafluoroborate electrolyte battery

IT Battery electrodes
(belectrochem. studies of metal dichalcogenide-polymer composite electrodes in 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate and 1-ethyl-3-methyl-imidazolium tetrafluoroborate)

IT Battery electrolytes
(electrochem. studies of metal dichalcogenide-polymer composite electrodes in 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate and 1-ethyl-3-methyl-imidazolium tetrafluoroborate)

IT 9011-17-0, Kynar 2801
RL: DEV (Device component use); USES (Uses)
(belectrochem. studies of metal dichalcogenide-polymer composite electrodes in 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate and 1-ethyl-3-methyl-imidazolium tetrafluoroborate)

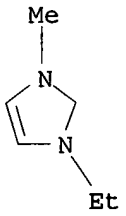
IT 1317-33-5, Molybdenum disulfide, uses 12039-13-3, Titanium disulfide 12143-72-5, Tantalum disulfide **143314-16-3 157310-72-0**
RL: **DEV (Device component use)**; USES (Uses)
(electrochem. studies of metal dichalcogenide-polymer composite **electrodes** in 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate and 1-ethyl-3-methyl-imidazolium tetrafluoroborate)

IT **143314-16-3 157310-72-0**
RL: **DEV (Device component use)**; USES (Uses)
(electrochem. studies of metal dichalcogenide-polymer composite **electrodes** in 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate and 1-ethyl-3-methyl-imidazolium tetrafluoroborate)

RN 143314-16-3 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

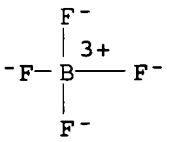
CRN 65039-03-4
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

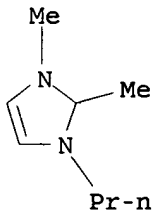
CRN 14874-70-5
CMF B F4
CCI CCS



RN 157310-72-0 HCAPLUS
CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

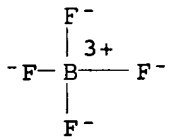
CRN 157310-70-8
CMF C8 H15 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



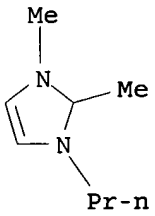
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 46 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:298107 HCAPLUS
DN 132:336832
TI Ionic liquid, graphite and gel polymer electrolytes and electrodes using 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate
AU Sutto, Thomas E.; De Long, Hugh C.; Trulove, Paul C.
CS Code 6170, Chemistry Division, NRL, Washington, DC, 20375, USA
SO Proceedings - Electrochemical Society (**2000**), 99-41(Molten Salts XII), 32-42
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB An electrochem. study of composite gel electrodes and half-cells, of DMPIBF4, PVdF-HFP Kynar polymer, and graphite was undertaken. Four different graphite-to-DMPIBF4 ratios were combined with six different graphite-DMPIBF4-to-polymer ratios. These 24 solid, black rubber-like gels were studied initially as simple electrodes and as half-cells in solid battery systems. Initial electrode studies indicated peak charge/discharge efficiencies of over 70% for several combinations. These optimized half cells were used in a solid state battery set-up to test their charge-discharge behavior in the absence of an external, supporting electrolyte. From these solid systems, the highest cation charging efficiency of 77% with an anion charging efficiency of 65% were observed for the sample of composition 55.58:27.75:16.67, graphite:DMPIBF4:polymer.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
ST battery gel polymer electrolyte; imidazolium tetrafluoroborate battery electrode
IT Battery electrodes
Battery electrolytes
(ionic liquid, graphite and gel polymer electrolytes and electrodes using 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate)
IT 7782-42-5, Graphite, uses **157310-72-0**
RL: **DEV (Device component use)**; USES (Uses)
(ionic liquid, graphite and gel polymer electrolytes and **electrodes** using 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate)
IT 9011-17-0, Kynar 2801
RL: TEM (Technical or engineered material use); USES (Uses)
(ionic liquid, graphite and gel polymer electrolytes and electrodes using 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate)
IT **157310-72-0**
RL: **DEV (Device component use)**; USES (Uses)
(ionic liquid, graphite and gel polymer electrolytes and **electrodes** using 1,2-dimethyl-3-propyl-imidazolium tetrafluoroborate)
RN 157310-72-0 HCAPLUS

CN 1H-Imidazolium, 1,2-dimethyl-3-propyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

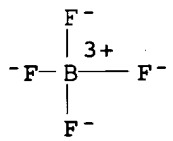
CRN 157310-70-8
CMF C8 H15 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

CM 2

CRN 14874-70-5
CMF B F4
CCI CCS



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 47 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:259152 HCAPLUS
DN 132:281629
TI Photoelectrochemical cells
IN Kakuno, Hiroyasu; Horiguchi, Akihiro
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

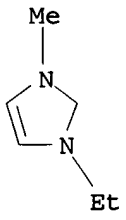
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000114563	A2	20000421	JP 1998-284147	19981006 <--
PRAI	JP 1998-284147		19981006 <--		

AB The cells have a n type semiconductor electrode formed on a transparent conductor, a pigment adsorbed on the electrode, a charge transport layer contacting the pigment, and a counter electrode contacting the charge transport layer; where the n-type semiconductor electrode is a Ti containing oxide and has a carrier concentration ≥1017/cm3.
IC ICM H01L031-04
ICS H01M014-00

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST photoelectrochem cell titanium oxide semiconductor electrode
IT Photoelectrochemical cells
(compns. of photoelectrochem. cells with pigment sensitized doped titanate semiconductor electrodes)
IT 1254-43-9 **263716-41-2**
RL: **DEV (Device component use)**; USES (Uses)
(charge transfer agents for photoelectrochem. cells with pigment sensitized doped titanate semiconductor **electrodes**)
IT 75-05-8, Acetonitrile, uses 96-49-1, Ethylene carbonate 631-40-3, Tetrapropylammonium iodide 7681-11-0, Potassium iodide, uses
RL: DEV (Device component use); USES (Uses)
(electrolytes for photoelectrochem. cells with pigment sensitized doped titanate semiconductor electrodes)
IT 12047-27-7, Barium titanate, uses 12060-59-2, Strontium titanate
RL: DEV (Device component use); USES (Uses)
(pigment sensitized doped titanate semiconductor electrodes for photoelectrochem. cells)
IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-62-2, Vanadium, uses 143169-03-3 199127-30-5
RL: MOA (Modifier or additive use); USES (Uses)
(pigment sensitized doped titanate semiconductor electrodes for photoelectrochem. cells)
IT **263716-41-2**
RL: **DEV (Device component use)**; USES (Uses)
(charge transfer agents for photoelectrochem. cells with pigment sensitized doped titanate semiconductor **electrodes**)
RN 263716-41-2 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, (DD-8-11111111)-octakis(cyano-κC)tungstate(4-) (4:1) (9CI) (CA INDEX NAME)

CM 1

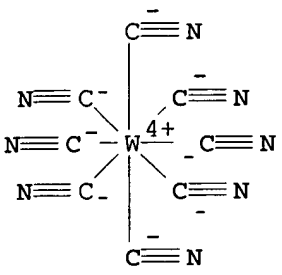
CRN 65039-03-4
CMF C6 H11 N2



ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

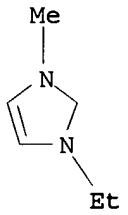
CM 2

CRN 18177-17-8
CMF C8 N8 W
CCI CCS



L53 ANSWER 48 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:234493 HCAPLUS
DN 132:267437
TI Room temperature molten salt as medium for lithium battery and alloy electrodeposition - fundamental and application
AU Fung, Y. S.
CS Department of Chemistry, Hong Kong University, Hong Kong, Peop. Rep. China
SO Trends in Inorganic Chemistry (**1998**), 5, 117-123
CODEN: TIICEB
PB Research Trends
DT Journal; General Review
LA English
AB A review, with 58 refs., of the current development and progress of the room temperature molten salt (RTMS) based on the AlCl3/1-methyl-3-ethylimidazolium chloride system. Both the fundamental and application aspects using RTMS as the medium for electrodeposition of metals, alloys and for high energy secondary lithium battery application have been covered and discussed. A survey on the structure and phys.-chemical parameters of the various molten salt media based on the AlCl3/MEIC and related systems as revealed by studies using NMR, X-ray, FTIR, electrochem. methods and other techniques is conducted. The effect of the composition and structure of the melt on the solubility of metallic salts, electrochem. nucleation of alloy phases, and chemical interaction occurred at the interface will be reported and discussed. Future areas of development and problems facing the application of RTMS will be assessed and discussed.
CC 52-0 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56, 72
ST review molten salt medium lithium battery
IT Secondary batteries
(lithium; room temperature molten salt as medium for lithium battery and alloy electrodeposition)
IT Salts, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(molten; room temperature molten salt as medium for lithium battery and alloy electrodeposition)
IT Battery electrolytes
Electrodeposition
Secondary batteries
(room temperature molten salt as medium for lithium battery and alloy electrodeposition)
IT Alloys, uses
RL: DEV (Device component use); TEM (Technical or engineered material

use); USES (Uses)
(room temperature molten salt as medium for lithium battery and alloy electrodeposition)
IT Metals, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(room temperature molten salt as medium for lithium battery and alloy electrodeposition)
IT 7446-70-0, Aluminum chloride, uses **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(room temperature molten salt as medium for lithium battery and alloy **electrodeposition**)
IT **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: **DEV (Device component use)**; TEM (Technical or engineered material use); USES (Uses)
(room temperature molten salt as medium for lithium battery and alloy **electrodeposition**)
RN 65039-09-0 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, chloride (9CI) (CA INDEX NAME)



● Cl^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RE.CNT 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 49 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:366331 HCAPLUS
DN 131:7488
TI Spinel LiMn2O4 electrode in room temperature molten salt
AU Fung, Ying Sing; Zhou, Ruqi
CS Department of Chemistry, The University of Hong Kong, Hong Kong
SO Electrochemistry (Tokyo) (**1999**), 67(6), 713-717
CODEN: EECTFA; ISSN: 1344-3542
PB Electrochemical Society of Japan
DT Journal
LA Japanese
AB Room temperature molten salt (RTMS) based on 1-methyl-3-ethylimidazolium chloride/AlC3/LiAlCl4 is recently shown to provide a promising medium for lithium battery due to its high current capability and inertness towards active material. In the present work, the electrochem. properties of a LixMn2O4 electrode in RTMS, the most commonly used pos. electrode material, were investigated by cyclic voltammetry, coulometric titration and constant current cycling. From cyclic voltammetric studies, the LixMn2O4 electrode in RTMS was found to exhibit the same electrochem. behavior as in other nonaq. electrolytes. However, a new and very large irreversible

anodic peak was found due to the insertion of AlCl4- into the carbon current collector. During coulometric studies, coulombic efficiencies greater than 96% were obtained at composition close to x = 1 in LixMn2O4. However, for range I (0 < x < 1), a rapid decrease in coulombic efficiency was observed at x less than 0.; for range II (1< x <2), close to 86% of the electrode material could be used. Thus, range II was selected for battery application. For cycling at range I, greater than 95% cycling efficiencies were obtained up to insertion/extraction capacities of 60 mAh/g, whereas at range II, 98% cycling efficiencies at the first 20 cycles were obtained up to 120 mAh/g. The difference was attributed to the irreversible insertion of AlCl4- anions into the carbon current collector at high anodic potential and hence less lithium was extracted from the LiMn2O4 electrode in 0 < x < 1. The electrochem. performance of the LiMn2O4 electrode as pos. electrode material for secondary lithium battery at different lithium insertion in RTMS was discussed in the light of the results obtained.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST battery lithium manganese oxide electrode

IT Intercalation
(electrochem.; spinel LiMn2O4 electrode in room temperature molten salt)

IT Secondary batteries
(lithium; spinel LiMn2O4 electrode in room temperature molten salt)

IT Battery cathodes
Battery electrolytes
(spinel LiMn2O4 electrode in room temperature molten salt)

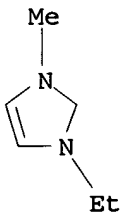
IT 7440-44-0, Carbon, uses 7446-70-0, Aluminum chloride, uses 12057-17-9, Lithium manganese oxide LiMn2O4 14024-11-4, Lithium tetrachloroaluminate 39457-42-6, Lithium manganese oxide **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: **DEV (Device component use)**; USES (Uses)
(spinel LiMn2O4 **electrode** in room temperature molten salt)

IT 7439-93-2, Lithium, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(spinel LiMn2O4 electrode in room temperature molten salt)

IT **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: **DEV (Device component use)**; USES (Uses)
(spinel LiMn2O4 **electrode** in room temperature molten salt)

RN 65039-09-0 HCAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, chloride (9CI) (CA INDEX NAME)



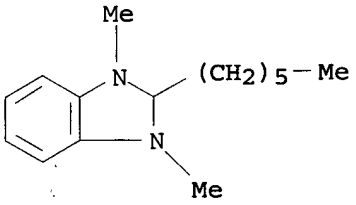
● Cl⁻

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 50 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:226341 HCAPLUS
DN 130:327202
TI Dye-Sensitized TiO2 Solar Cells: Structural and Photoelectrochemical Characterization of Nanocrystalline Electrodes Formed from the Hydrolysis of TiCl4
AU Park, N.-G.; Schlichthoerl, G.; Van de Lagemaat, J.; Cheong, H. M.; Mascarenhas, A.; Frank, A. J.
CS National Renewable Energy Laboratory, Golden, CO, 80401, USA
SO Journal of Physical Chemistry B (**1999**), 103(17), 3308-3314
CODEN: JPCBFK; ISSN: 1089-5647
PB American Chemical Society
DT Journal
LA English
AB The structure and photoelectrochem. properties of TiO2 films deposited onto SnO2 conducting glass from the ambient hydrolysis of TiCl4 and annealed at temps. ranging from 100 to 500° were studied by Raman spectroscopy, X-ray diffraction, TEM, intensity-modulated photovoltage spectroscopy (IMVS), and intensity-modulated photocurrent spectroscopy (IMPS) measurements. Anal. of the XRD and Raman spectra shows that TiCl4-produced TiO2 films have the rutile structure, regardless of annealing temperature The TEM reveals that the rutile TiO2 films consist of rod-shaped particles that grow with increasing annealing temperature The AM-1.5
short-circuit photocurrent Jsc and open-circuit photovoltage Voc of Ru[LL'(NCS)2]-sensitized (L = 2,2'-bypyridyl-4,4'-dicarboxylic acid, L' = 2,2'-bipyridyl-4,4-ditetrabutylammoniumcarboxylate) 4.5 μm thick rutile films increase significantly with annealing temperature, from 1.1 mA/cm2 and 602
mV at 100° to 8.7 mA/cm2 and 670 mV at 500°. Studies of the incident photon-to-current conversion efficiency (IPCE), the photocurrent-voltage characteristics, the optical appearance, the water content, and the particle size of the films indicate that the increase of both Jsc and Voc with annealing temperature is due, in part, to increased dye adsorption resulting from the evaporation of surface water and the improved light-scattering properties of the film associated with the growth of rutile particles. IMVS and IMPS measurements indicate that variations of the charge-collection efficiency of the cell, which increases from 86% for the 300° annealed samples to above 99% for the 500° annealed samples, have only a minor effect on Jsc. Anal. of the time consts. at open circuit and short circuit for a given electron injection current suggests that the ratio of free-to-trapped electrons at short circuit decreases and the diffusion coefficient of free electrons increases with annealing temperature Raman and XRD measurements and other observations indicate that treating transparent nanocryst. anatase TiO2 electrodes with TiCl4 produces a translucent overlayer of rutile TiO2. The increased film thickness and light-scattering characteristics of the rutile overlayer may explain, in part, the improved IPCE observed for dye-sensitized TiCl4-treated nanocryst. anatase TiO2 electrodes.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST solar photoelectrochem cell dye sensitized titania
IT Photoelectrodes
(structural and photoelectrochem. characterization of nanocryst. electrodes formed from hydrolysis of TiCl4 for dye-sensitized TiO2 solar cells)
IT **78483-77-9**
RL: **DEV (Device component use)**; USES (Uses)
(structural and photoelectrochem. characterization of nanocryst. **electrodes** formed from hydrolysis of TiCl4 for dye-sensitized TiO2 solar cells)

IT 13463-67-7, Titania, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(structural and photoelectrochem. characterization of nanocryst. electrodes formed from hydrolysis of TiCl4 for dye-sensitized TiO2 solar cells)
IT 7550-45-0, Titanium tetrachloride, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(structural and photoelectrochem. characterization of nanocryst. electrodes formed from hydrolysis of TiCl4 for dye-sensitized TiO2 solar cells)
IT 18282-10-5, Tin dioxide 207347-46-4
RL: TEM (Technical or engineered material use); USES (Uses)
(structural and photoelectrochem. characterization of nanocryst. electrodes formed from hydrolysis of TiCl4 for dye-sensitized TiO2 solar cells)
IT **78483-77-9**
RL: **DEV (Device component use)**; USES (Uses)
(structural and photoelectrochem. characterization of nanocryst. **electrodes** formed from hydrolysis of TiCl4 for dye-sensitized TiO2 solar cells)
RN 78483-77-9 HCAPLUS
CN 1H-Benzimidazolium, 2-hexyl-1,3-dimethyl-, iodide (9CI) (CA INDEX NAME)



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ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 51 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:782101 HCAPLUS
DN 130:27265
TI Electrode compositions suitable for use under large electric current
IN Matsui, Hiroshi; Imai, Takasyuki; Edo, Takashi
PA Fujikura Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10321232	A2	19981204	JP 1997-126093	19970515 <--
PRAI JP 1997-126093		19970515 <--		

AB The compns. comprise ion-conducting polymers 100, disulfides 50-350, conductive C powder 10-120 parts, and 10-180 parts benzimidazole derivs., benzothiazole derivs., or acridine derivs. The compns. are useful not

only for secondary batteries, but also for capacitors, electrochromic displays, etc.

IC ICM H01M004-60
ICS H01G009-058; H01G009-025; H01G009-028; H01M004-62; H01M010-40; G02F001-155

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST ion conducting polymer battery electrode; benzimidazole disulfide carbon electrode; benzothiazole disulfide carbon electrode; acridine disulfide carbon electrode

IT Battery cathodes
Electrodes
(electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT Carbon black, uses
Disulfides
Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(lithium complex, conductive polymer; electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT Ionic conductors
(polymeric; electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT 7439-93-2D, Lithium, poly(vinylidene fluoride) complex, uses
RL: DEV (Device component use); USES (Uses)
(conducting polymer; electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

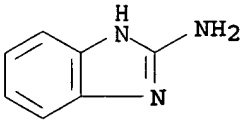
IT 24937-79-9D, Poly(vinylidene fluoride), lithium complex
RL: DEV (Device component use); USES (Uses)
(conductive polymer; electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT 90-45-9, 9-Aminoacridine 136-95-8, 2-Aminobenzothiazole **934-32-7**, 2-Aminobenzimidazole 30555-21-6, Poly(2,5-dimercapto-1,3,4-thiadiazole)
RL: **DEV (Device component use)**; USES (Uses)
(**electrode** compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(plasticizer for conducting polymer; electrode compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

IT **934-32-7**, 2-Aminobenzimidazole
RL: **DEV (Device component use)**; USES (Uses)
(**electrode** compns. comprising polymers, disulfides, conductive C, and benzimidazole, benzothiazole, or acridine derivs.)

RN 934-32-7 HCAPLUS
CN 1H-Benzimidazol-2-amine (9CI) (CA INDEX NAME)

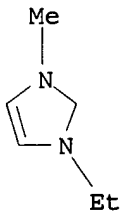


L53 ANSWER 52 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:396793 HCAPLUS
DN 127:83852
TI Li-Al negative electrode characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten salt electrolyte
AU Koura, Nobuyuki; Ui, Koichi
CS Fac. Sci. Technol., Tokyo Univ. Sci., Noda, Japan
SO Keikinzoku (**1997**), 47(5), 267-272
CODEN: KEIKA6; ISSN: 0451-5994
PB Keikinzoku Gakkai
DT Journal
LA Japanese
AB The rocking chair type lithium secondary battery using an LiCl saturated AlCl3-1-ethyl-3-methylimidazolium chloride (EMIC) melt as a nonflammable electrolyte operated at room temps. has been developed. LiCl was soluble in the acidic melts (50 mol% < AlCl3). Li metal wa added to the melt in order to reduce Al2Cl7- remained in the melt to Al and AlCl4-. As a result, the potential window of the melt became about 4.4 V between the reduction potential of EMI+ and the oxidation potential of AlCl4-. Lithium was only deposited on an Al electrode from this melt. Cyclic voltammograms for an Al electrode in the melt showed reversible depositing and resolving behavior for lithium. From x-ray diffraction anal., it was confirmed that Li-Al alloy was formed on the Al substrate at room temperature Chronopotentiograms for an LixAl electrode in the melt showed ca. 280 Ah/kg of discharge capacity at the potential plateau range about -1.5 V vs. Al.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST lithium aluminum alloy anode battery; electrolyte ethylmethylimidazolium chloride aluminum chloride battery
IT Battery anodes
(Li-Al neg. electrode characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten salt
electrolyte)
IT Battery electrolytes
(LiCl saturated AlCl3-1-ethyl-3-methylimidazolium chloride; Li-Al neg. electrode characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten salt electrolyte)
IT Secondary batteries
(lithium; Li-Al neg. electrode characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten
salt electrolyte)
IT 12798-95-7
RL: DEV (Device component use); USES (Uses)
(Li-Al neg. electrode characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten salt
electrolyte)

IT 7446-70-0, Aluminum chloride, uses 7447-41-8, Lithium chloride, uses
65039-09-0, 1-Ethyl-3-methylimidazolium chloride
RL: **DEV (Device component use)**; USES (Uses)
(electrolyte; Li-Al neg. **electrode** characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten salt electrolyte)

IT **65039-09-0**, 1-Ethyl-3-methylimidazolium chloride
RL: **DEV (Device component use)**; USES (Uses)
(electrolyte; Li-Al neg. **electrode** characteristics for the rocking chair type lithium secondary battery with a nonflammable ambient temperature molten salt electrolyte)

RN 65039-09-0 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, chloride (9CI) (CA INDEX NAME)



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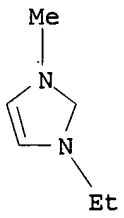
ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE

L53 ANSWER 53 OF 53 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:930588 HCAPLUS
DN 123:345624
TI Stability of sodium electrodeposited from a room temperature chloroaluminate molten salt
AU Gray, Gary E.; Kohl, Paul A.; Winnick, Jack
CS Sch. Chem. Eng., Georgia Inst. Technol., Atlanta, GA, 30332-0100, USA
SO Journal of the Electrochemical Society (**1995**), 142(11), 3636-42
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB Room temperature molten salts consisting of 1-methyl-3-ethylimidazolium chloride (MEIC) and AlCl3 have been examined as possible electrolytes for a room temperature design of the sodium/iron(II) chloride battery. This work exams. the conditions required to achieve efficient reduction and oxidation of sodium from a sodium chloride buffered, neutral melt. Two substrates were examined, tungsten and 303 stainless steel, using both cyclic voltammetry and chronopotentiometry. Melts were protonated using a closed electrochem. cell to allow quantification of the effect of dissolved HCl on the efficiency of the sodium couple. A threshold of approx. 6 Torr HCl partial pressure was observed for sodium plating-stripping. Below this threshold, the sodium couple was not observed The results show that the sodium plating-stripping efficiency increases with increasing c.d.; however, the efficiency reaches a maximum passivation occurs as even a very thin layer of plated sodium exhibits a steady open-circuit voltage over long periods in the melt.
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy

Technology)
Section cross-reference(s): 72
ST sodium electrodeposit stability iron chloride battery
IT Battery electrolytes
(1-methyl-3-ethylimidazolium chloride/AlCl3; stability of sodium electrodeposited from a room temperature chloroaluminate molten salt for sodium/iron(II) chloride battery)
IT Batteries, secondary
(sodium/iron(II) chloride; stability of sodium electrodeposited from a room temperature chloroaluminate molten salt for)
IT 7440-23-5, Sodium, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(stability of sodium electrodeposited from a room temperature chloroaluminate
molten salt for)
IT 7446-70-0, Aluminum chloride, uses **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: **DEV (Device component use)**; USES (Uses)
(stability of sodium **electrodeposited** from a room temperature chloroaluminate molten salt for sodium/iron(II) chloride battery)
IT 7440-33-7, Tungsten, uses 12725-27-8
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; stability of sodium electrodeposited from a room temperature chloroaluminate molten salt for sodium/iron(II) chloride battery)
IT **65039-09-0**, 1-Methyl-3-ethylimidazolium chloride
RL: **DEV (Device component use)**; USES (Uses)
(stability of sodium **electrodeposited** from a room temperature chloroaluminate molten salt for sodium/iron(II) chloride battery)
RN 65039-09-0 HCAPLUS
CN 1H-Imidazolium, 1-ethyl-3-methyl-, chloride (9CI) (CA INDEX NAME)



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